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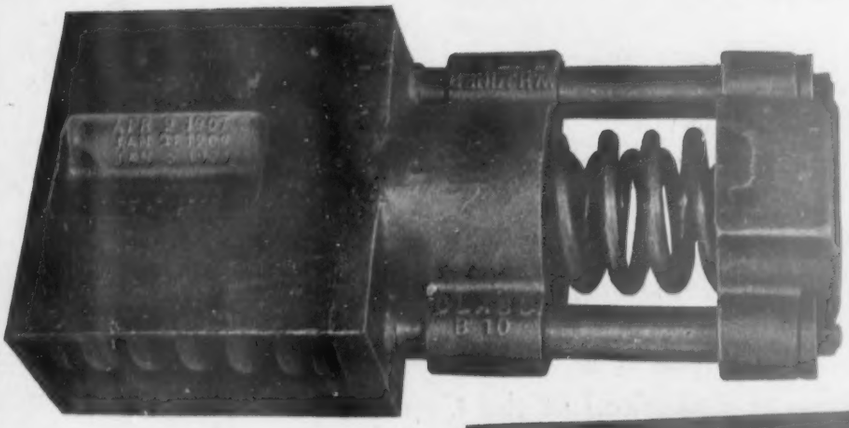
MINER



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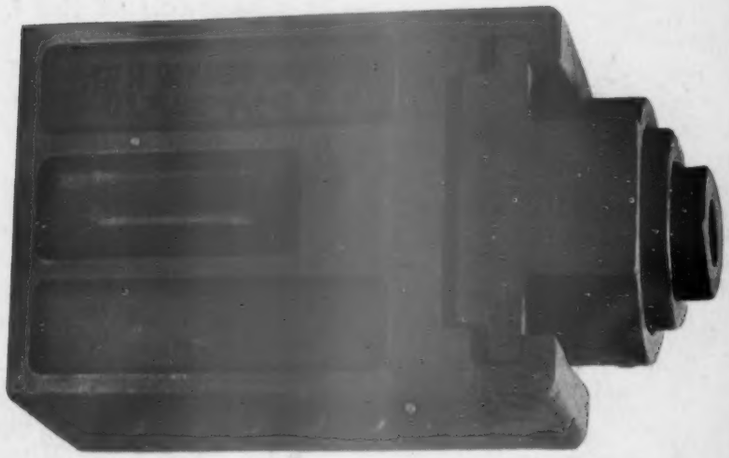

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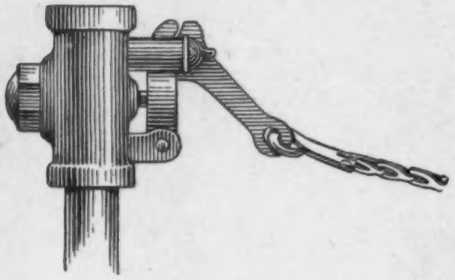

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Railway Age

DAILY EDITION

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WE GUARANTEE that of this issue, 12,400 copies were printed; that of these 12,400 copies, 10,300 were mailed to regular paid subscribers to the Railway Age and Railway Mechanical Engineer; 110 were mailed to advertisers; 490 were provided for counter and news companies sales, new subscriptions, bound volumes, samples, copies lost in the mail and office use; and 1,500 copies for distribution at Atlantic City.

THE RAILWAY AGE is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Have you any idea as to just what extent electrical apparatus is used by the steam railroads? It is not easy to determine this quantitatively, but a careful examination of the exhibits will furnish some interesting information. There are 336 exhibits at the convention and out of this total, 98 exhibitors are showing apparatus which is in part at least electrical. Some of the exhibitors have reception booths only and others, such as publishers, cannot properly be classified. If these are subtracted, the number which include electrical equipment will become about a third of the total. This proportion as to the extent to which electrical apparatus is used on the railroads may or may not prevail in actual practice, but it is in a measure at least representative and indicates a trend of the times. Are you making adequate provisions for the maintenance and selection of all electrical apparatus? During the past 30 years or more, electrical men have been taken into steam railroad organizations and they are employed by several of the departments on many roads. A few roads have well-organized electrical departments that can handle all electrical matters thoroughly and efficiently. Is it not time that every other road should give consideration to organizing their electrical work in a similar manner?

A Factor of Increasing Importance

A number of mechanical men whose interests center to a large extent around the operation of shops and terminals have expressed regrets that no reports were given this year by the committee on engine terminals, car repair shop layouts, or welding. To many these are matters of vital importance, and for that matter it is hard to see how such subjects could fail to be of interest to every man in the mechanical department. Neither is there any reason why the interest should stop at mechanical department lines, for when these subjects are approached from the broader economic viewpoint they present aspects that must be recognized and given attention by the highest operating and executive officers. Far too many subjects taken up at these conventions seem to be dealt with from a narrow and purely mechanical department viewpoint. If this department is to assume the importance that is its due, the outlook must be a much broader one.

Do Not Forget the Shop

There have been oceans of correspondence, an untold amount of controversy, hard feelings, accusations, charges and countercharges about "Wrong Repairs." Car Associations, Interchange Bureaus, Arbitration Committees, railroads and individuals have discussed this problem for years. The discussions and arguments are always the same. They are aptly summarized as follows:

!!!!!*********XXXXXXX!!!!!!????——————******????
XXXXX!!!!!!!??????********XXXXXX!!!!!??????

Ad Infinitum

How to Eliminate Wrong Repair Controversies

The best solution of this problem, as presented by T. H. Goodnow at the informal discussion of the Arbitration Committee's report on Wednesday afternoon, is:

BE SURE TO APPLY DEFECT CARDS WHEN YOU SHOULD.

Any one who reads the report of the Committee on Train Brake and Signal Equipment is likely to conclude that the question of automatic connectors is receiving little attention from the railroads. The list of equipment fitted with connectors in the report is far from complete. The committee fails to mention another significant fact—that such representative roads as the Baltimore & Ohio, the Monon, Chicago, Burlington & Quincy and Chicago, Milwaukee & St. Paul are now testing connectors. Where the most approved types of connectors have been applied even those who were skeptical at first have recognized the benefits in improved operation and reduced maintenance cost. Many mechanical officers agree with the opinion expressed by C. E. Fuller at the 1919 convention, that connectors are bound to come. At present the Mechanical Division is taking no active part in the development of connectors. At least five different types of heads are now in use. Most of the installations are confined to individual roads, but as the number of connectors increases, interchangeability will become a serious problem. Will

Will History Repeat Itself

the roads face a condition similar to that which existed when automatic couplers were introduced, when some 50 different styles were in use? By guiding the development of connectors at this time, at least insofar as interchange is concerned, the association can save the railroads the trouble and expense that will result if many installations of non-interchangeable types are made.

Why Foremen Fail

Why do some foremen fail? Here is what one foreman has to say in reply to this question: "Superintendents call their foremen together and then call them *down*. Subjects discussed are bum work, not enough work, and look out for your jobs! Do you wonder that foremen get disinterested?" Let us hope that this sort of spirit does not exist on many roads, and yet, unfortunately observation leads us to believe that it is entirely too prevalent. It is true that railroad officers are harassed by all sorts of difficult problems and that they find little time to do as much constructive work as they should like to do. Officers who deal with their foremen, as above suggested, are standing in their own light, and sooner or later will have to step down and out to make room for better men. You cannot get the best work out of men by scolding them, continually finding fault with them, or by adopting a "please explain" attitude. A real leader does not find it necessary to drive his men. Rather does he show a spirit which enthuses and inspires them to put forth greater efforts and to do better work. A little commendation oft-times puts new spirit into a man. The foreman who made the statement at the head of this paragraph followed it up with this one: "Nowadays the superior officer is made to appear as an executioner and is about as popular, simply because many of the evils for which he blames the supervisors can be traced to the superior officers themselves."

Needs of the Stores Department

Great advances have been made in stores department methods and practices in recent years, but unfortunately many railroads have been forced to continue the use of inadequate storehouses which were built from 25 to 40 years ago. The storekeepers in charge of these buildings are struggling along as best they can, "trying to do a 100 per cent. business with a 35 per cent. building and facilities." It speaks volumes for these men that they are doing as well as many of them are, but can the railroads afford to allow them to continue to operate under these handicaps any longer than is absolutely necessary? True, the railroads have great difficulty in raising new capital and must apply such money as is available where the greatest needs exist. A good up-to-date building with adequate storage capacity, ample facilities in the way of yardage, scrap docks, etc., and such machinery and appliances as will conserve labor, can be shown to realize a good percentage on the investment. It is strictly up to the stores department officers, however, to assemble such data as will prove this conclusively to the men who must approve of the appropriation. The executives are confronted with so many demands for additions and improvements that they can only approve of those which are of the greatest importance and will show the greatest returns on the additional investment. It is up to the stores department to back up its requests with data and figures which will demonstrate the needs beyond question and indicate what returns may be expected from the proposed investments.

Machine Equipment for Engine Terminals

It is a far too common error to assume that any old machine tool is good enough for an engine house. Even at the present time it is the policy on many roads to install modern machines in the back shops, transferring those which are displaced to enginehouses and outlying points. This practice may be justified in certain specific cases but as a rule it is costly. In the first place machines are seldom displaced in railroad shops until they are 15 or 20 years old, having been designed in an earlier period when machines worked under comparatively light cutting feeds and speeds and when no special effort was made to have them easily operated. The labor cost of operating such machines in back shops is no greater than the cost of operating them in enginehouses. Looking at the question from another angle there are sound arguments why roundhouses should have just as good and in some cases better machinery than the backshops. The fundamental object of a roundhouse is to get engines turned and ready for service with the least possible delay. It is evident, therefore, that speed and accuracy are two qualifications of roundhouse machine operations even more urgent than when performed in backshops. For example, a main rod back end brass may need to be reduced and rebored for a certain engine which is going out immediately. If the machine operations on this brass are performed by filing and attempting to bore the brass on an old engine lathe there is obviously a great chance for the locomotive being delayed. Not only that but when the brass is rebored there is no certainty that the job will not be inaccurate and have to be done over again. Obviously rapid and accurate work and machines adapted to the different kinds of work handled are essential in roundhouses.

A New Star—or Comet?

A new star appears this year in the convention firmament at Atlantic City—the Air Brake Association. Possibly it more properly should be classed as a comet among the other bodies of the A. R. A., since it is not so fixed in position as to make Atlantic City its permanent annual meeting place, but will meet in convention with the other associations periodically and with sufficient frequency to insure a closer affiliation in the co-operative work necessary to secure maximum efficiency in its efforts. The Air Brake Association is unique in character, being different from, yet closely related to, the other railway associations now convening in Atlantic City. It is primarily and fundamentally educational in nature, and incidentally uncovers much of practical operating and maintenance value which can be utilized advantageously by the other parental associations having the responsibility of railway direction. These features make closer and more effectual co-operation possible and desirable. The numerous problems of modern and complex train operation involve many air brake factors which must be recognized and dealt with. New employees entering the service must be instructed in the part which the air brake plays and old employees must be kept abreast of the times in new air brake developments. Casual and desultory attempts will not suffice. Specialization in this exceedingly important work is necessary, and the best results come only from constant and concerted effort; hence the necessity for the Air Brake Association and a suitable fitting of its work into the perfect co-ordination of the several associated railway organizations. This, of necessity, must bring about a closer affiliation with the Mechanical Division, yet permit the Air Brake Association ample freedom of action to follow effectually its educational work.

The Work of the Mechanical Division

THE OFFICERS of the mechanical departments are responsible for the disbursement of from 35 to 40 per cent of the operating expenses of American railroads. They determine the nature of the additions and improvements to facilities which in the aggregate account for more than 20 per cent of the total investment in railway property.

To one aware of these facts and the tremendous bearing they have on the welfare of our transportation system, the programs at recent meetings of the Mechanical Division seem inadequate. The Mechanical Division is dealing admirably with many problems. But has it been dealing with all the problems it should be dealing with, or that in view of the history of the organizations that preceded it, it is reasonable to assume its members would be disposed to deal with if they felt they had an entirely free hand? To be specific, it is time to raise a question as to whether the incorporation of the mechanical associations in the American Railway Association is having a good effect.

During the decade following the Civil War, when the unlimited exchange of products which railway transportation seemed to make possible was in danger of being throttled by the restrictive effects of chaotic equipment conditions, the Master Car Builders' Association was organized by a group of far-seeing car department officers. These men and the generations following them, functioning on their initiative as individuals, built up and secured the adoption of a system of standards and limiting requirements for freight cars which, though far from perfect in detail, effectively removed the barriers of interchange from the free circulation of the country's commerce—the life blood of its material civilization.

Bringing the record down to our own time, the development of the standard Type "D" coupler is a noteworthy addition to the list of its great accomplishments.

The American Railway Master Mechanics' Association, although dealing with matters on which little occasion has arisen for the development of universal standards, for a half century was a voluntary medium for the "advancement of knowledge concerning the principles, construction, repair and service of rolling stock." Its real accomplishments have been the crystallization of opinion on such important developments as, for instance, the superheater, by a free exchange of facts and personal experiences at its sessions. It was the medium through which the only extensive scientific study of the drafting of locomotives ever made, was given to the railway public. It was also instrumental in bringing together the injector manufacturers and the railroads in the development of standard flange pipe connections.

In 1918 the two parent associations were reorganized as a section of the American Railroad Association. By this move they passed definitely under the control of its executive committee, on which the Railroad Administration at that time had a dominating influence. This committee, following the reorganization of the American Railway Association at the close of Railroad Administration control, has become a committee of the Association of Railway Executives. Since these reorganizations, there has seemed to many to be a growing tendency for the programs of the mechanical conventions to omit subjects which ought to be included. No criticism is implied because certain important committees with well developed programs under way have found it necessary to present progress reports this year. It is the long list of subjects in which the members individually and the railways they represent are vitally interested, but with which the Mechanical Division has not been dealing, that invites comment.

What is the most trying problem faced by mechanical department officers today? Every mechanical officer would make the same answer. It is the personnel problem, of course. In testifying before the Senate Committee on Interstate Commerce, A. H. Smith, president of the New York Central Lines, said that "the efficiency of a railroad depends principally upon its men. It is estimated that 95 per cent of railroading is human."

True, certain conditions affectng labor have been largely removed from the control of railroad officers, and it may not be desirable to have too free an expansion of opinion on these matters,—not in public, at least. But would it not be wise to discuss the training of foremen? Progressive railroad officers have come to a strong realization of the importance of these men to the effectiveness of an organization and are giving special attention to selecting, training and cultivating them.

Is the training of apprentices, to perpetuate the army of capable mechanics required by the railroads, a subject which must be discussed in whispers behind closed doors? Conditions affecting apprenticeship are constantly changing, and opportunity for organized constructive work is perennial.

Is it necessary to remain silent regarding the shortcomings often shown by the executives in relation to the maintenance and operation of equipment? Chairman Tollerton dwelt on it in his opening address. It is a point meriting more attention. Most shortcomings of this kind are caused by ignorance. How is ignorance to be dispelled by a policy of silence on the part of the only men qualified to give the executives the facts? Minor associations of railway officers discuss such matters constructively. Why should not the Mechanical Division?

The locomotive is the most important material factor in the operation of the railroads. Whether it be the selection of a new locomotive type to meet local requirements, the distribution of power to meet changing conditions, the best train loading, or the development of effective methods of train operation, an intimate knowledge of the limitations of the locomotive, as well as of other operating characteristics, is essential.

There are few operating officers who know the limitations of the locomotive; there are few mechanical officers who know the limitations imposed on the operating officer by the character of the traffic and of other facilities. What are the possibilities of long locomotive runs? What effect will they have on the cost of locomotive maintenance? Will the practical limitations on this development prevent the attainment of increased locomotive mileage? Can these limitations be made less restrictive by improvements in grates, drafting appliances and details of the running gear?

If the mechanical officer is to be a factor in answering these questions and in controlling the utilization of the locomotive, he must broaden his horizon to take the operating officer's problems into his perspective. What better medium is there for bringing this about than the Mechanical Division? If this organization does not take up these problems, some of other live organizations will do so.

In his addresses at three successive conventions, Chairman Tollerton has advocated the development of some means for co-operative research, and for joint testing of railway appliances. At the 1920 convention the report of a committee on the Establishment of a Co-operative Research Bureau outlined a wide range of work which

could suitably be handled by such a bureau and asked to be continued to study the relation of such a bureau to the development of policies of the association. Has the subject been buried in committee?

Are there no unsettled questions as to the proper ratio between the expenditures for running and back shop repairs? Is it not possible that the correct determination of this ratio might have a material influence on the aggregate cost of maintenance and the future expansion of back shops and division terminals? Members of the Mechanical Divisions are studying these problems. Would the association not benefit by taking them up for discussion?

What are the committees on Engine Terminals, Design and Operation and on Car Repair Shop Layouts doing? Are there no improvements in terminal and shop facilities, in their organization and in operating practices which could be discussed with profit by the members of the Mechanical Division?

None of these subjects is suitable for treatment by the strong arm methods of legislation, nor are many of them ready for the committee investigation. But every one of them has been the subject of close investigation and study by one or more of the members of this organization. The advanced work of leaders is considered worthy of the attention of the voluntary organizations in other fields. The by-laws of the American Railway Association set forth its object as "the discussion and recommendation of methods for the scientific and economical construction, maintenance and operation of American railroads." Is the failure of the Mechanical Division to deal with subjects such as those mentioned the fault of the Mechanical Division, or is it the outgrowth of repressive measures of control or to fear of possible executive displeasure?

The car committees, generally speaking, have well defined tasks, the objects of which are the development or modification of legislative measures for controlling the interchange of equipment. The work of these committees is now the principal work done by the Division. But if they confine their activities to the development of the recommendations only, and do not present fully the reasons for the recommendations and give opportunity for discussion of them, why hold a convention? If the committees are to confine themselves merely to making recommendations they had just as well report their findings to the General Committee, to be referred to the representative members for action by letter ballot. In any case the vote of each member will depend on how the interests of his road seem to be affected. Why come to Atlantic City unless the subjects are to be illuminated by a frank exchange of personal opinions, free from the fear of official displeasure? Plenty of opportunities are given in the sessions for such free interchanges of opinion, but few take advantage of them.

This leads up to a question as to the real effectivenss of the legislative work of the organization. The repeated extensions of time for the retirement of undesirable types of equipment, indicates the complete dependence of progress in these matters on the concensus of opinion as their value to the railroads individually. Obviously, unless this opinion can be changed by tht work of these committees, just as rapid progress will be made without legislation as with it. The real work of these committees has only just begun when an agreement has been reached by the committee members. If the work is to be effective the committees must be able to present a convincing array of facts as to the economic effect of the changes or standards proposed. Unsupported opinions are not convincing and have little effect in changing the trend of action when the ballots are cast.

The work of the Mechanical Division should be highly educational as well as legislative. The list of subjects here suggested as suitable for consideration by no means exhausts the possibilities for future constructive work—they are limitless. Neither does it imply a belief that the organization should not have an official connection with the American Railway Association. There are well-defined advantages in this relationship, provided the Association encourages great freedom of development of the Division and does not attempt to pour it into a mold of its own making. But it is evident that wise guidance by the Association and courageous leadership in the Division will be required if the incorporation of the Division into the American Railway Association is to do more good than harm. The greatest possible good will be done only if the higher executives of the railways encourage the fullest investigation and free discussion of *all* important mechanical department matters, and if the members of the Mechanical Division take the fullest advantage of the opportunity thus afforded.

Programs for Today

Four railroad conventions will meet in Atlantic City today.

Division VI, Purchases and Stores, A. R. A.

The meetings of this association will be held in the Hotel Traymore. The session will open sharp at 9 a.m. and will adjourn at 1 p. m. The program is as follows:

	A.M.	A.M.
Meeting called to order by Chairman		9:00
Invocation	9:00 to	9:10
Address of Welcome by Mayor of Atlantic City	9:10 to	9:20
Response by J. H. Waterman	9:20 to	9:30
Address by R. H. Aishton, President, American Railway Association	9:30 to	9:45
Address by W. G. Besler, first vice-president, American Railway Association	9:45 to	10:00
Address by Elisha Lee, vice-president, Pennsylvania System, (Eastern Region)	10:00 to	10:15
Opening of Meeting by Chairman	10:15 to	10:40
Recess	10:30 to	10:40
Communications	10:40 to	10:50
Appointment of Committees (Resolutions and Memorials)	10:50 to	10:55
Action on Minutes of 1921 Business Meeting	10:55 to	11:00
New Business:		
Report of General Committee	11:00 to	11:15
Discussion of General Committee's Report	11:15 to	11:20
Discussion of reports on:		
Subject 1.—Stores Department Book of Rules	11:20 to	11:40 P.M.
Subject 2.—Classification of Material	11:40 to	12:30 P.M.
Special Subject: "Distributing and Accounting for Gasoline," by Mr. L. V. Hyatt	12:30 to	1:00

Division V, Mechanical, A. R. A.

The meeting of this organization will be held in the Greek Temple on the Million Dollar Pier. The meeting will be called to order sharp at 9:30 a.m. and will adjourn at 12:30 p.m. The program is as follows:

Discussion of Reports on:

Manual.

Election of Officers.

Discussion of reports on:

Specifications and Tests for Material.

Locomotive Headlights and Classification Lamps.

(*Continued on Page 1551*)

Picked Up On The Million Dollar Pier

A Few Comments, Critical and Otherwise, of the Work of the Mechanical Division

IT IS INTERESTING and oft-times exceedingly profitable to listen to and then weigh carefully some of the observations that are made by the railroad men and others at the conventions as to the present shortcomings of the Mechanical Division and how they may be overcome. *The Daily,* of course, assumes no responsibility for the following statements which have been made to its representatives but publishes them as a matter of news and with the idea that some of them may suggest means by which the work of the associations may be made more effective.

* * * * * * * * *

One member has suggested that it might be well to retain a specialist who is a good reader with a strong voice to present the reports at the meetings. The chairman of the committee could stand alongside of him and interrupt during the reading of the abstract of the report, if he wished to make special comments on any point. Much of the value of the presentation of the reports is lost because of the fact that the committee chairmen will not, or cannot, speak up loudly and plainly and make themselves heard throughout the room. Surely men who have charge of hundreds and sometimes thousands of other men, and who direct their energies, should be able to make a better presentation than some of them do. How can they be made to feel the importance and necessity of so doing? Is it necessary to provide a professional reader?

* * * * * * * * *

Another member has made the suggestion that the effectiveness of the presentation and discussion of the reports would be greatly increased if every member of each committee was present when the report was presented and if they all sat together in a body at or near the platform. This practice is followed by the American Railway Engineering Association. The members all sit behind a long table on the platform and the chairman of the committee frequently calls upon other members of the committee to present certain parts of the report; or if questions are asked from the floor, designates the member of the committee who is in the best position to give the answer. It is unfortunate that often only one or two members of an important committee are present to support their chairman; it has been suggested that prior to the meeting each year the General Committee should notify the executive officers on the different railroads of the names of the men on their roads who are on the committees, and ask that special efforts be made to see that they attend the convention and support their committees.

* * * * * * * * *

Someone has called it the "Amen Corner." The connection at first was not quite clear until it was explained by some of the members who have not been able to find seats near the front of the meeting room. It seems that several members who take part in the discussions of the reports have a habit of sitting near the front of the room and speaking direct to the chairman and in such an indifferent manner that most of the members present are deprived of the privilege of following their remarks intelligently. Courtesy, of course, demands that those members taking part in the discussion should address the chairman, but there is no good reason why they should not aim to at least partially face the audience and speak clearly, so as to get their remarks over.

If some of the younger members want to make a record for themselves they can do so by studying how effectively to address the meeting and then putting their strength and energy into making themselves heard. Not only is this necessary, but the men ought to aim to "get their personalities over." This is not always easy to do, but men who expect to make good as executives in these days have got to perfect themselves in public speaking. The man who made these comments, by the way, was not an agent for one of the correspondence school courses on public speaking, but was a hard-headed mechanical department officer who is trying to get as much good as he possibly can from the meetings, and would like to hear everything that is being said. We hesitate to refer to the comments made by the official reported, and he is located in a most advantageous position.

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If it were possible to compute, on the basis of the salaries received by the people present at a given session, the total compensation for the group per minute, the size of the figure might be startling. If, then, each member were to realize that every minute he took to express himself cost this amount of money, the result might be interesting. It might lead many of the members to study the advance copies of the reports more critically before they try to discuss the reports and might make them look up the answers to obvious questions themselves before the meeting, rather than to waste the time of all the members present. It might inspire the different committees to complete their reports early enough so that they could be sent out to the membership and be thoroughly digested well in advance of the time of the meeting. It might force the presiding officer to bring down the gavel hard and shut off members who are wandering from the subjects under discussion, or who are not utilizing the time to the greatest advantage. It might, in the final analysis, tremendously add to the practical value of the proceedings and the prestige of the Mechanical Division.

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Many comments have been received commending *The Daily* for its editorial on Friday morning on "Make Room for the Young Men." One member has suggested that this is entirely up to the young men themselves. "If they have the right sort of stuff in them they will force themselves to the front, even though they may not be encouraged." Men like C. G. Juneau, W. H. Winterrowd, W. J. Bohan, C. T. Ripley, M. H. Haig (not here this year) etc., have made themselves felt. Undoubtedly the older men in the organization would be delighted to have more of the younger men follow the leadership of this younger group. One member has suggested that live and progressive organizations always utilize the energy, ambition and vision of the younger men and that one of the principal functions of the older executives is to encourage these men and allow them plenty of room for the display of

initiative. Unfortunately, what is everybody's business is nobody's business. If every superintendent of motive power would deliberately aim to encourage his more ambitious subordinates to get into the work of the Mechanical Division and get on their feet at the meetings and then back up these younger men in putting over some of the really big things that they want to do, there would be club and it is getting to be more important every day that little room for complaining about the programs or work of the Division.

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One member suggests that when the mechanical department officers are at home they spend the greater part of their time in dealing with problems relating to the handling of men and to questions of operation. On the other hand, when they come to the convention, the great bulk of the reports and discussion are concerned with mechanical details, or as a member expressed it, "bolts and nuts." This man was quite enthusiastic over the editorial in Saturday morning's *Daily* entitled "Why Not Discuss Labor Questions?" He suggested in addition, however, that there are many operating questions, such as lengthening out the locomotive runs, possibilities of motor cars, etc., that ought to be reported upon and discussed at Atlantic City.

Another member suggested that developments during the past decade have shown that in proportion as the strength of the cars has been increased, so the carelessness of the train service men in handling the cars has increased. This, of course, cannot go on indefinitely. The dead weight per revenue ton must be kept to the lowest possible point if America is to lead in carrying freight and passengers expeditiously and safely at the lowest cost and still continue to pay its employees the highest wages. Mechanical department officers have got to do their part in educating operating officers and others to this truth and have got to stop trying to make equipment which will stand unlimited abuse. If train service men will not see this thing and operating officers continue to stand for the increasing abuse of the equipment, then in the last analysis the public will either be forced to pay exorbitant rates or the men will have to have their wages reduced.

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A lively discussion developed among a group of mechanical department officers in one of the reception booths. The point blank statement was made that the Mechanical Division was not putting over as strong a program as it should and that unless it pulled itself together and did more effective work it would rapidly lose its prestige. Stories were told by some of the older men in the group of the remarkable accomplishments of the Master Car Builders' Association and the Master Mechanics' Association. Three reasons were advanced as to why the Mechanical Division was not doing as good work as should be expected of it.

One reason was that the discontinuance of conventions during the war and reconstruction period had interfered greatly with the carrying on of the committee work and this had restricted efforts largely to routine matters and had interfered with the consideration of new and more constructive work. The fact was also developed that mechanical department officers had had some mighty difficult problems to contend with during the reconstruction period and that these had prevented them from taking up many problems which otherwise woud have received consideration. In reply to this however, others indicated that never was there a time when the department had been confronted with such gigantic and vital problems and that a serious mistake had been made in not providing for a thorough study and discussion of these, in order that the proper leadership might be supplied in these difficult times.

The second reason advanced for the poor showing of the Mechanical Division was that the taking over of the M. C. B. and M. M. Associations by the A. R. A. had put the brakes on them, so to speak. There appeared to be two sides to this question also. Some contended that the higher executives were discouraging the mechanical department officers from taking up many of the larger subjects which should receive consideration, while others contended that the officers of the American Railway Association would be only too glad to see the mechanical men show more initative, and place the Division on the basis of a Moses leading the mechanical departments out of the wilderness. Some thought that the situation is large by psychological or rather that the mechanical men are a bit too timid and have allowed themselves to get into a state of mind that is not productive of the best results.

It seemed to be agreed, however, that it is up to the mechanical department officers to get busy and start something; this would either demonstrate that the trouble is entirely a question of psychology or it would clearly develop what the limitations of the Mechanical Division are. The final suggestion was that it would be a bully good thing if the officers of the American Railway Association would put it right up to the mechanical department men to study, discuss and report upon some of the really big questions relating to personnel problems and operation which are now being overlooked, possibly for fear of criticism from above.

The third reason advanced for the somewhat unsatisfactory showing of the Mechanical Division is that the whole thing is largely a matter of personnel. You can't keep a good man down, and it was contended that if the leaders of the Mechanical Division would show the same initiative as has been shown by the American Railway Engineering Association, the Fuel Association, and the Railway Accounting Officers' Association, like results would follow.

It is a good thing occasionally, it was suggested, to have a drastic reorganization. One great international organization has found that it is necessary to more or less reorganize and revise its program periodically, say, once every 10 years. It was suggested that the Mechanical Division in the same way ought to put a "vacuum cleaner" at least on its subcommittees and see that each committee is headed by a "live wire" and that the men of the greatest vision, initiative and ability be selected to back them up.

It was suggested, also, that more individual papers should be presented on vital topics and that the Mechanical Division meetings could be very greatly improved, not only by doing this but by arranging for thorough and formal discussions of the reports or individual papers as is now being done to such great advantage by some of the more progressive railroad clubs.

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One railroad man asked some of his friends just how the committees were appointed and as to whether they held frequent meetings in developing their reports. "It would appear," he said, "that some of the committee members hardly know that they are on a committee, or at least are not familiar with the report when it is finally developed." In supporting this statement he directed attention to the fact that a member criticised one of the committee reports from the floor last week and was invited by the chairman of the committee to submit to the committee certain data which he referred to. Investigation revealed

the fact that the member who criticised the report and was in a position to furnish additional data was included among the names of the members of the committee on the printed report that was under consideration. Are the committees working as committees or are some of them dominated by one man or a minority of the committee? When a man is appointed on a committee is the head of his department notified and does the railroad agree to back up the committee member by allowing him sufficient time to attend to the committee work and assisting him to secure information so far at least as the questions under consideration relate to the practices of his own road?

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One critic handed in the following in writing:

"As one reads over the program of this year's convention of Division V—Mechanical, he finds many old friends both among the subjects and among the lists of men on the various committees. Some of the committees, with few or many changes in membership, have been doing duty for many years and reports from them are looked for just as one looks to see the waves come rolling in from the ocean onto the beach at Atlantic City. There are members on some committees who have done valiant work in the past on matters new and vital, and recognition and reward should justly be given if it has not already been done.

"There is a question, however, whether this should take the form of a life membership on a committee. It might be better to grant honorary degrees, as is the custom of our colleges at this time of the year, or following this example, start an emeritus list. Another way might be to have on some of the old committees a list of consulting members to include those whose services have been of so much value in the past. This would bring some of the younger men into position to assist the association to take new steps forward. It is even possible that as the committee list is gone over it will be found that some subjects have been so well covered that the committee which has been standing so long could be allowed to sit down, possibly to take a nap or even go to sleep. There certainly is a sufficient number of new and vital subjects that might be taken up at these conventions even though some of the good old standby subjects were not included."

The Power of the Railroad Club

George M. Basford has always been greatly interested in the work of the railway clubs and the various mechanical department associations. Moreover no man in the railroad field has done more to encourage and help young men. He has urged the younger men to take part in the meetings and programs of these organizations, not only that the young men might help themselves, but also because of the energy and help that they could give to improving these organizations and making them more effective. Mr. Basford has been acting as chairman of the Committee on Subjects of the Central Railway Club during the past year and has done much through the improved programs to increase the interest and enthusiasm of the members in the work of the club.

We found George in a quiet corner on the pier a day or two ago and, knowing his hobby, started him to talking on the possibilities and power of the railroad clubs, and as to how they might be utilized by the younger men to the advantage of both the men and the clubs.

"A friend told me how, many years ago, he was hired as a specialist in an immense organization," said Mr. Basford. The first one he talked with was the president, a very successful man. The president said this to him;

" 'Young man you have come to the foot of our ladder. It is a long one. Remember that I am lonesome up here at the top and that you are in a big crowd at the bottom. But every rung in this ladder is a perfectly good one for climbing.'

"My friend did climb out of the crowd to the presidency of a successful company in a business that he built up from the ground. This is mentioned because his success was due largely to railway clubs and other organizations of railroad men. He spent 20 years on railroads and not only joined but took active part in club work. He gives the clubs and the old Master Car Builders' Association credit for inspiring him and broadening his vision. In his office at his busy factory, he told me that nothing had ever helped him more than to write a paper or take part in a discussion which compelled him to prepare to tell somebody something that was worth telling.

"Urge the young men to join the railway clubs," he said. "I made a list a short time ago of 24 important, influencial men who have used the railway clubs to their own advantage, to the advantage of the clubs and to the great advantage of their employers. But in doing so much for themselves they have done even more for many others who have been helped by their examples.

"One of these men is at the head of one of the world's greatest electric companies. For years he was an obscure young railroad man. He had no friends but the ones he made. He attended meetings. He made it a rule to prepare something to say and to say it at every technical meeting—something worth while. He wrote papers and they are classics, the last word to date on his subject. He inspired himself and inspired others by being in and a part of every new railroad development—operating, mechanical and signaling. He made friends and mixed in discussions in the corner of the room before and after the meeting when others told what they lacked courage to tell on the floor. When he started to write a paper he found how much he did not know of the subject and he fortified himself. No one could embarrass him by an attack on the floor because he was always sure of his ground. Speaking in public was distasteful to him but he overcame this. I am sure he would not be where he is today and in position to help the railroads as he is today, without the railway clubs. Get the young men to do as he did. Get them to put some valuable thought into the record of every meeting. They will take more thought away than they bring.

"Years ago one of my friends wrote three important papers. Within a short time after the presentation of each of them he received a promotion to a better job. Another friend definitely owes the acquaintance that made him successful to a paper he wrote for a railway club 25 years ago.

"The railway clubs are forums for railroad men that are needed as they never have been needed before. Operating officers, track officers, those in charge of cars, locomotives, signals, bridges and terminals, never, not even on their own roads, get together as they may in a railway these officers should mingle to study and to understand each other's problems.

"Do track officers generally appreciate the influence they may exert over locomotive fuel consumption? Do signal engineers realize how greatly their work affects the cost of maintenance of cars? Do operating officers see that much of the success of electric locomotives is due to the improved operating methods employed in every electric installation and that steam locomotives would yield remarkable results under similar methods?

"These suggest the possibilities of the railway clubs to

bring together these men who supply equipment, power and track and the men who use them. Most railway clubs have been unbalanced, one-sided, mostly mechanical. They may be broadened and will be broadened when a few young men from each road see what the railway club can do for them.

"Latent talent in great abundance among obscure, unknown young men crowding the foot of the railroad ladder may be brought out by these clubs. It is the privilege and duty of those of us who are older to get young men to see the light that railway clubs can throw into their futures—and the future of transportation is to be guided by these young men on whom the welfare of the country depends.

"Urge the young men to join the clubs; attend the meetings; suggest topics to the Committee on Subjects; write papers, no matter how short, but each must bring a message. Take part in the discussions. Bring out some good point for the benefit of others, some fact or constructive suggestion that will help the railroads even a little bit. This desperate railroad situation may be materially changed by inside team work."

"Our railway clubs," said Mr. Basford, "present a truly wonderful field of opportunity today and it is not by any means only young men who should take advantage of them. Older men may keep younger and may widen vision, improve usefulness and increase their measure of success by using the railway clubs as they should be used."

Force of Habit

"YES," SAID THE specialist, as he stood at the bedside of the sick purchasing agent, " I can cure you."

"What will it cost?" asked the sick man, faintly.

"Five hundred dollars."

"You'll have to shade your price a little," replied the purchasing agent. "I had a better bid from the undertaker."—*Adscript.*

Lost and Found

LOST—A platinum bar pin set with diamonds. Please return to Mrs. W. B. Leach, Hunt-Spiller Manufacturing Corporation, Booth 562.

Lost—A black Paradise feather in front of the Ambassador Hotel. Please return to J. R. Blakeslee, Ajax Manufacturing Company, Space 65.

Found—A string of beads, a bracelet, a key, a shoe buckle, a setting for a ring and a cuff link. These articles will be returned to their owners upon application to Secretary Conway at the Enrollment Booth, after making proper identification.

Lost—Badge No. 8243. Mrs. Jos. J. Edwards.

Prof. A. J. Wood Promoted

ARTHUR J. WOOD, professor of railway mechanical engineering at Pennsylvania State College, has been appointed head of the Department of Mechanical Engineering.

Professor Wood was graduated in 1896 from Stevens Institute of Technology; his father, the eminent teacher and engineer DeVolson Wood, devoted twenty-five years of his life to that institution. After graduation, Professor Wood was on the editorial staff of the *Railroad Gazette,* combining practical engineering work with this position. Later he was instructor in mechanical engineering at Worcester Polytechnic Institute, professor of mechanical and electrical engineering at Delaware College, and since 1904 a member of the mechanical engineering faculty at Pennsylvania State College, where he received his Master of Science degree in 1916. More recently he has been in direct charge of the engineering experiment station.

Since coming to Penn State, Professor Wood's work has been characterized by the organization and conduct of the course in railway mechanical engineering, the development of researches in heat transmission, the preparation of his text book on Locomotive Operation, and by a varied consulting practice chiefly in power plants and railroad work. He has also presented many papers before engineering and scientific societies, and is widely known for researches in heat transmission. He is a member of the Sigma Tau honorary engineering fraternity.

In reply to an inquiry as to the future of the course in railway mechanical engineering at Pennsylvania State College, Professor Wood says: "My appointment to the head of the Department of Mechanical Engineering will enable me to direct the work in railway mechanical engineering so as to insure a gradual and more permanent development of it in our course of study. I have never been favorable to over-specialization in railroad work and our course given in the Department of Mechanical Engineering has not been specialized to the exclusion of a good foundation in the fundamentals of straight mechanical engineering subjects.

"It may be of interest to note that five members of the present mechanical engineering faculty have had considerable railroad experience and during the past year three of these men have been giving instruction in railway mechanical subjects. We have had many requests for members of our graduating class to take up special apprenticeship courses, but can supply few of these calls. One of the items in the request for state appropriation which will be made during the coming year is for a transportation building. Altogether, I anticipate a strengthening and broadening of our course in railway mechanical engineering."

Mexican Railway President at Conventions—Left: Leon Salinas, Executive President, National Railways of Mexico; Right: F. P. De Hoyos, General Agent at New York

Programs for Today

(*Continued from Page 1546*)

Air Brake Association

The twenty-ninth annual convention of this association will be held at Haddon Hall, Vernon Room, and opens at 9:30 a.m.

Edwin F. Bader, mayor of Atlantic City, will deliver the address of welcome. The Reverend Newton W. Caldwell, pastor of the Olivet Presbyterian Church, will invoke divine blessing.

The first subject for discussion will be the committee paper on "Air-Operated Auxiliary Devices on Locomotives." This will be followed by a paper by Prof. S. W. Dudley of Yale University on "Wastes in Air Brake Service."

Association of Railway Electrical Engineers

The association will hold its semi-annual convention at the Hotel Dennis. The meeting will be called to order promptly at 9:30 a.m. This will be the first official get-together of the electrical men for two years and a large representation is expected. The order of business is as follows:

Address of President.
Report of Secretary-Treasurer.
Unfinished Business.
New Business.
Progress of Committee Train Lighting Equipment and Practice.
Progress Report of Committee on Locomotive Headlights.
Progress Report of Committee on Data and Information.
Progress Report of Committee on Electric Welding.
Progress Report on Committee on Illumination.
Progress Report of Committee on Electric Repair Shop Facilities and Equipment.
Progress Report of Committee on Motor Specifications.
Progress Report of Committee on Power Plants.
Progress Report of Committee on Power Trucks and Tractors.
Paper on Industrial Heating by B. F. Collins.

Entertainment Features

10:30 a.m.—Orchestral Concert, Entrance Hall, Million Dollar Pier.

3:30 p.m.—Orchestral Concert and Impromptu Dancing, Entrance Hall, Million Dollar Pier. Tea Will Be Served at 4:30 p.m.

9:00 p.m.—Informal Dance, Special Features, Ball Room, Million Dollar Pier.

Locomotives on Track Exhibit

The Philadelphia & Reading is exhibiting on its track in Mississippi avenue, a little south of the pier near the boardwalk, two modern locomotives. One is of the Pacific type, built at its own shops and used on Atlantic City trains. The weight, exclusive of the tender, is 183,700 lb. and the rated tractive effort 39,046 lb.

The other is a new Consolidation locomotive, No. 1900, built by the Baldwin Locomotive Works. This has 25-in. by 32-in. cylinders, 55½-in. drivers, 94.5 sq. ft. grate area and 3,752 sq. ft. equivalent heating surface. It carries 210 lb. boiler pressure, weighs 286,000 lb., exclusive of the tender, and has a rated tractive force of 64,300 lb. It is equipped with a Duplex stoker and Worthington feedwater heater.

Then there is the oil-burning Santa Fe type locomotive built for the Southern Pacific by the Baldwin Locomotive Works and fully described elsewhere in this issue.

Official Registration Lists

The Official Registration Lists will be published today and Wednesday, June 21. No list will be issued on Tuesday.

The McBarmma Golf Tournament

The McBarmma Golf Club—"the most exclusive golf club in the world", as one of its members facetiously called it—had its annual tournament at the Seaview Golf Club on Saturday. The tournament was followed by the annual dinner and election of officers. The new officers elected are: president, B. F. Flory; Vice-president, George H. Sargent; directors, H. C. Manchester and W.L. Conwell; secretary-treasurer, Clement F. Street.

The golf play resulted in the awarding of the following prizes: championship and first prize in Class A, H. Gilliam, 86-4-82; Class A, second prize,, W. L. Conwell, 88-2-86; Class B, first prize, Robert F. Carr,94-10-84; Class B, second prize, A. H. Sission, 95-9-86; Class C, first prize, F. H. Clark, 96-16-80.

The Carr cup for the low net score of the afternoon play went to F. H. Clark.

It was alleged that "pop" Sisson was disqualified because he did not play the nineteenth hole or smoke cigarettes, and Clement F. Street claimed the second prize in Class B. Mr. Sisson seems to be out of luck, since nobody has ever yet successfully contested any position taken by Clement regarding any feature of the club or proceeds thereof.

F. H. Clark on Chinese Railway Conditions

F. H. Clark, formerly general superintendent of motive power of the Baltimore & Ohio, recently returned from China, where for over two years he was technical adviser of the Ministry of Communication of the Chinese government. Mr. and Mrs. Clark and their daughter are here attending the conventions. Regarding railway conditions in China, Mr. Clark said yesterday:

"The railways of China amount to about 7,000 miles, including concessional lines, provincial and private lines and the lines of the Chinese Government Railways. The latter have a total of something like 4,000 miles and include about 15 different lines built mainly by foreign capital but partially by the Chinese themselves. Railway construction was making some progress at the time of the outbreak of the war in 1914, but was soon afterward discontinued and has only recently been resumed in a relatively small way.

"China has made contracts or agreements covering approximately 1,000 miles of additional lines and will eventually need a great deal more to serve properly her area and population. She has an area greater than that of the United States, a population supposed to be three or four times as great and a railway mileage of less than three per cent of that of the United States.

"These figures should not be used as a basis for estimating the ultimate railway mileage of China, but only as an indication of her need for a considerable amount of additional mileage. With the inauguration of a stable government having the confidence of Chinese and foreign investors, the development of the country should proceed very rapidly.

"Manufacturing and mining are generally done on a small scale suited to local needs. This is largely due to a lack of transportation facilities and as these are provided and markets broadened we may expect to see production on a larger scale.

"Large cotton mills, flour mills and various other industries are already in successful operation in some parts of the country. Coal, iron, ore and other minerals seem to be widely distributed.

"China has always been an agricultural nation but seems to have the raw materials and the labor, which if properly directed, should make her a great manufacturing nation."

Enrollment Today

THE ENROLLMENT BOOTH at the entrance to the Million Dollar Pier will be open today from 9 a.m. to 1 p.m.; 2 p.m. to 6 p.m.; and from 8 p.m. to 9 p.m.

Santa Fe Dinner

JOHN PURCELL, assistant to the vice-president in charge of the mechanical department of the Atchison, Topeka & Santa Fe, tendered an informal shore dinner to the Santa Fe guests who are attending the conventions, including a number of old time Santa Fe men and their wives. About 18 were in attendance and the evening was enjoyed by all.

Registration Figures

THE COMPARATIVE REGISTRATION figures for 1922 and 1920 up to 1 o'clock Sunday noon are as follows:

	1922	1920
Div. V.—M. M. and M. C. B.	695	707
Div. VI.—Pur. and Stores	127	140
Special guests	477	441
Supply men	2,117	2,262
Railroad ladies	619	569
Supply ladies	564	634
Total	4,599	4,753

Equipment Orders Still Coming In

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered five Mikado locomotives from the Baldwin Locomotive Works and the Lehigh Valley is inquiring for five locomotives.

The Western Pacific expects to let contracts this week for 2,000 refrigerator cars; the New York, Chicago & St. Louis has ordered 1,000 freight cars from the Illinois Car & Manufacturing Company; and the Grand Trunk has ordered 250 refrigerator cars from the National Steel Car Corporation, Hamilton, Ont.

The Interborough Rapid Transit Company has ordered 100 new cars from the Pullman Company.

Ticket Office for Convention Attendants

THE PENNSYLVANIA RAILROAD will open a ticket office at 9 a.m. this morning for the convenience of the people in attendance at the conventions. The office will be located at the entrance to the pier, adjacent to the Enrollment booth. Reservations may be made for all trains on the Pennsylvania running to Philadelphia, Pittsburgh, New York, Chicago, etc., and tickets will be isued to any point on the Pennsylvania System. Extra cars are to be placed on all trains that will be used by returning convention visitors, but reservations should be made as early as possible in order that proper and sufficient accommodations may be provided.

News from South America

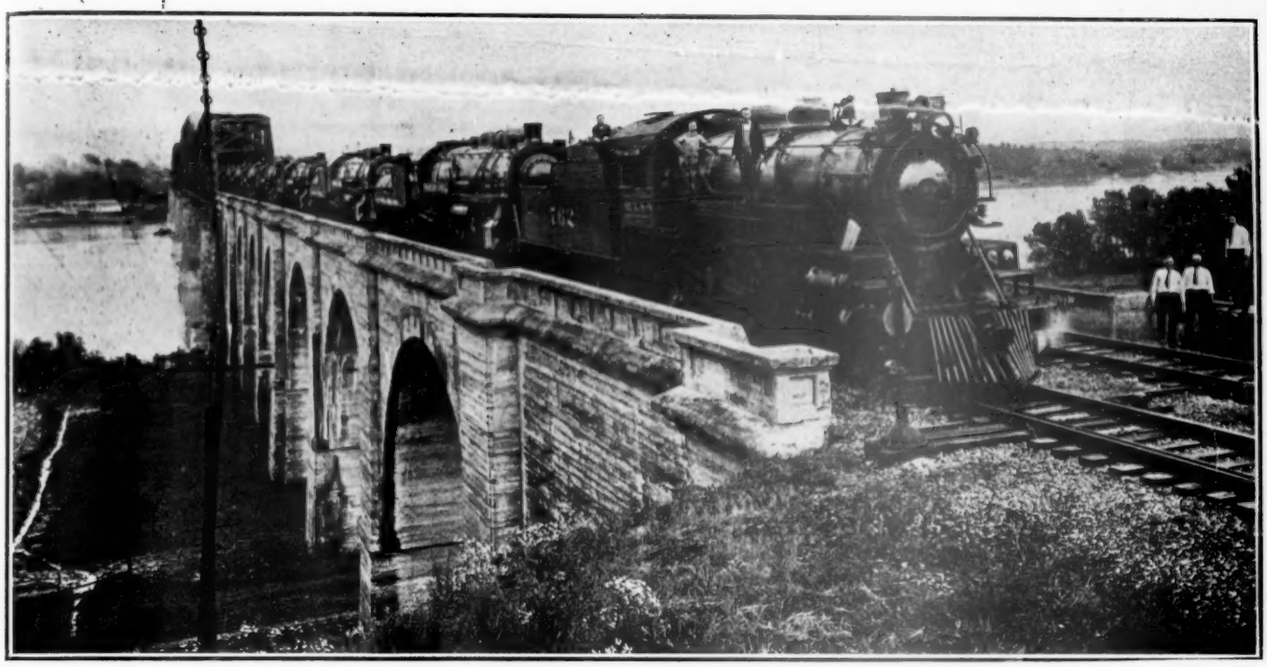
S. G. DOWN, general sales manager of the Westinghouse Air Brake Company, has but recently returned from a three-months' tour of South American countries, including Brazil, Argentina, Chile and Peru. In commenting on the conditions in South America, Mr. Down believes that there will be a good market for American railway material in the near future, particularly from the Government owned lines. As regards the privately owned roads, the possibilities of the United States for business are not as good, primarily because they are operated on English capital, which naturally means that purchases will be made in England where possible. In this connection Mr. Down pointed out that before America can hope to derive any great amount of business from privately owned railway companies, it must be ready to invest money in foreign enterprises, for it is patent that business will go to that country which has financial control of the properties in question.

Mr. Down also commented on the lack of proper American steamship connections with South American countries. Speaking of the general practices on the railways, Mr. Down said that on the national railways of Brazil, Argentina and Chile, the Westinghouse air brake is standard, and that a large number of the railways in Peru are using this brake. South American countries seem to favor the American type of equipment. This is logical, for with clearance limitations larger than those obtaining in many of the European countries, the South American roads are at liberty to develop more along the lines of larger and more powerful engines, as is the case in the United States.

Registration, American Railway Association, Div. V, Mechanical

Aiken, Arthur, Chf. Clk. to P. A., Penn., Ambassador.
Albers, L. H., Supvr. of Air Brakes, N. Y. C., Haddon Hall.
Anderson, H. A., Asst. P. A., Penn. Traymore
Andreucetti, J. A., Asst. Elec. Eng., C. & N. W., Traymore.
Bardo, C. S., C. M., N. Y. N. H. & H.
Beaumont, H. A., G. F., B. & O., Llewelyn.
Bell, E. E., M. Insp., St. L. & S. F., Dennis.
Berg, K., Supt. Loco. Shops, P & L. E., Strand.
Biam, W. L., Mech. Asst. to Pres., N. Y. N. H. & H., Shelburne.
Billau, L. S., Ass. Elec. Eng., B. & O., Chalfonte.
Bingaman, Chas. A., M. E., P. & R., Bothwell.
Black, W. G., M. M., Nickel Plate, Haddon Hall.
Boland, W. E., Sig. Engr., S. P., Shelbourne.
Boltwood, Harvey, M. E., Div. of Liquid. of Claims, Haddon Hall.
Booth, J. K., M. M., B. & L. E., Chalfonte.
Bover, F. G. F., C. R. R. of N. J., Terminal.
Brangs, Paul H., M. M., Chelsea.
Brooks, C. E., Mech. Asst. to V. P., C. N., Haddon Hall.
Brown, Chas. G., Act. Asst. M. M., Penn., Chalfonte.
Burke, Arthur J., Asst. Clk. Stores Dept., P. & R.
Bushnell, F. A., P. A., G. N., Shelburne.
Cantley, W. I., M. E., L. V., Traymore.
Chandler, J. E., G. S., Duluth & Iron Range, Shelburne.
Chenoweth, E. G., M. E., C. R. I. & P., Chalfonte.
Clark, R. A., Gen. Mgr., Rahway Valley, New England.
Clarke, A. B., G. F., P. & R., Stanley.
Clem, W. A., Asst. P. A., P. & R.
Clemmitt, J. H., P. A., N. & W., Ritz.
Cochrane, John T., Pres. & Genl. Mgr., A. T. & N. Shelburne.
Cochrene, Jr. John T., L. & N., Shelburne.
Colklesser, W. R., P. A., D. & W., Ambassador.
Cooper, F. E., M. M., B. & O., Shelburne.
Cooper, W. Haco, Div. Store., P. & R.
Cordova G., C. C. to P. A., Nat. Ry. of Mexico, Ambassador.
Courtney, Harry, M. E., P. & L. E., Strand.
Curley, Wm. J., Air Brake Insp., P. & R.
Curtis, D. C., Gen. Store. C. M. & St. P., Traymore.
Davidson, W., G. S., I. C., Dennis.
Davis, W. L., G. F., Penna., Martinique.
Dawson, V. N., Div. Store. B. & O. Ritz.
Desmond, James, Ch. Insp., D. & H., Haddon Hall.
Diehl, W. J., P. A., M. & O., Traymore.
Dillon, S. J., S Insp., Penna., Louvan.
Donellan, T. F., M. M., D. & H., Haddon Hall.
Donovan, Henry, Sp. Engr., U. P., Strand.
Dougherty, Daniel A., Asst. Cl. Stores Dept., P. & R.
Douglas, T. W., M. M., Atlanta Joint Term. Rry. Princess.
Droege, J. A., G. S., N. Y., N. H. & H., Penn.
Drury, M. J., Mech. Insp., Santa Fe, Chalfonte.
Dunn, P. T., M. M. C. & P. Div., Penn., Haddon Hall.
Edmonds, G. S., S. M. P., D. & H., Haddon Hall.

(*Continued on Page 1561*)



Prosperity Special Leaving Thebes Bridge, Illmo, Mo., June 7, 1922.

A Notable 2-10-2 Type for the Southern Pacific

Feedwater Heater and Booster are Features of Latest Design Which is Exhibited at the Conventions

DURING RECENT WEEKS the newspapers have been filled with accounts of the progress of the "Prosperity Special." A solid train of twenty 2-10-2 type locomotives, part of an order of 50 of this type for the Southern Pacific, left the Eddystone, Pa., plant of the Baldwin Locomotive Works on May 26 for California, where the equipment will be delivered to the railroad. Interest in this event among those attending the conventions has been increased by the fact that one of the locomotives included in the same order is the principal feature of the track exhibits this year.

Through the courtesy of the locomotive builders, members of the railway and supply associations and their guests were afforded an opportunity of seeing the moving pictures showing the progress of the train between Philadelphia and New York. On the occasion of this exhibit, which was held last evening in the Rose Room of the Hotel Traymore, Samuel M. Vauclain, president of the Baldwin Locomotive Works, who was primarily responsible for the movement of the train, delivered an address.

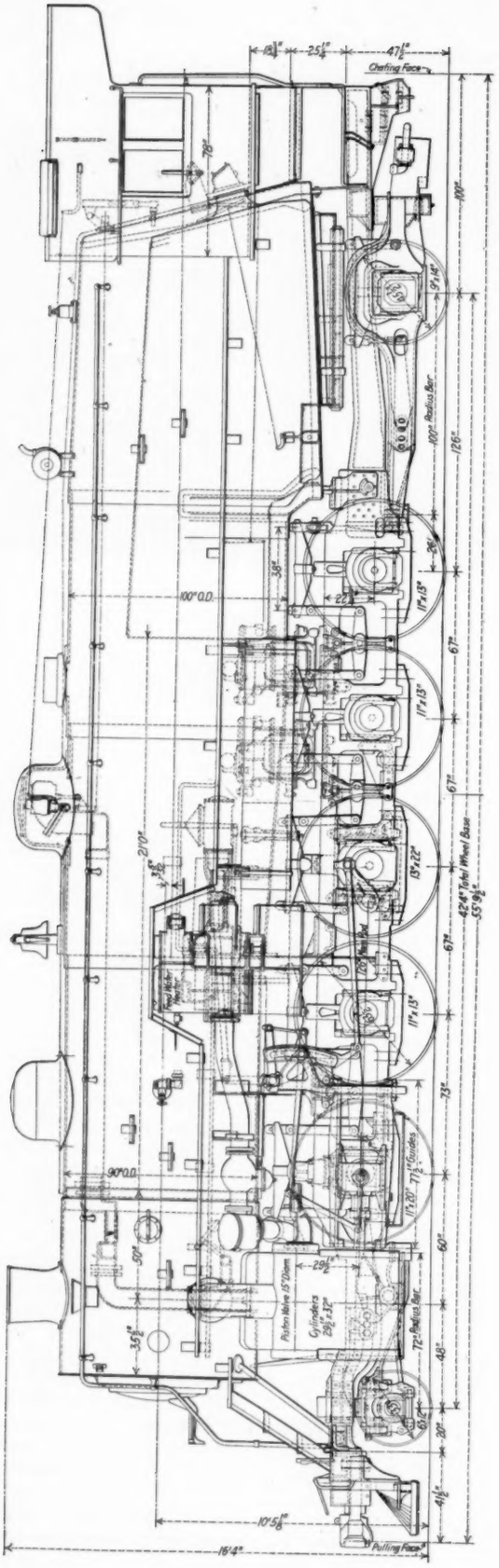
A solid train of locomotives is such an unusual sight that the "Prosperity Special" has attracted great crowds at all points along the route. The train was moved only during the day, giving all who were interested opportunity to inspect it at the points where it stopped. The route chosen was over the Pennsylvania System to East St. Louis, thence over the St. Louis-Southwestern to Corsicana, Texas, where connection is made with the Southern Pacific Lines.

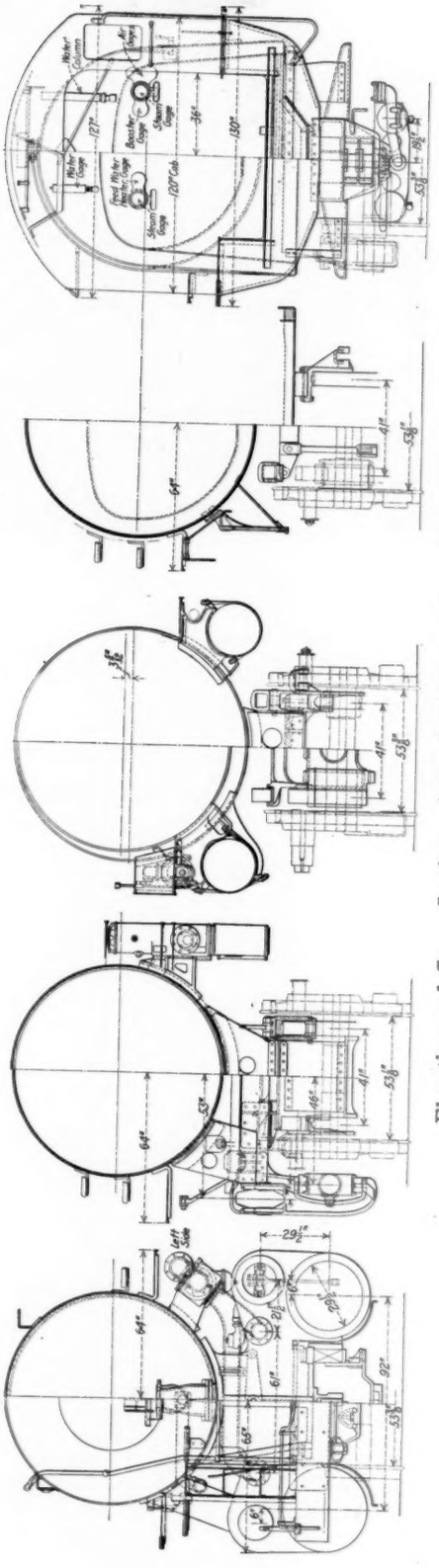
One of the most remarkable events of the trip was the run around Horseshoe Curve, west of Altoona, Pa., where the train was moved with six locomotives, two in front, two in the center and two pushing. Moving pictures were taken of the train at various points on the curve; these were among the pictures shown last night.

Details of the Locomotives

Aside from the fact that this order is one of the largest that has been placed for locomotives of the 2-10-2 type, the equipment is notable because it marks the first extensive installation of feedwater heaters and of the locomotive booster. Although they are exceeded in total weight by other locomotives of similar types, the appliances mentioned probably increase boiler output and starting tractive effort beyond anything heretofore obtained.

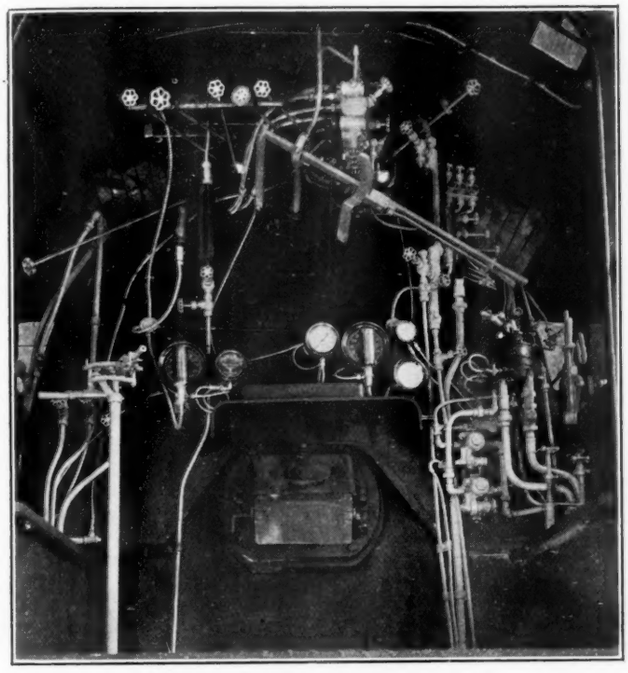
The first Baldwin locomotives of the 2-10-2 type built for the Southern Pacific were constructed in 1917 and were designated as Class F-1. These locomotives weigh 348,000 lb. and develop a tractive effort of 65,300 lb., and have been successfully used not only in heavy freight service but also in passenger service on grades exceeding two per cent. They were followed in 1920 by a group of larger locomotives known as Class F-3, having a total weight of 385,900 lb. and developing a tractive effort of 75,150 lb. These locomotives were briefly described in the *Railway Age* of July 2, 1921. The new locomotives (Class F-4) are practically identical with the Class F-3, except for the addition of a feedwater heater and booster. The tractive effort of the main engines is the same as the Class F-3 locomotives. In addition the booster develops 9,500 lb. at starting, or 8,950 lb. at a piston speed of 250 ft. per min. The combined tractive effort at starting is therefore 84,650 lb. All the locomotives referred to above burn oil for fuel and are equipped with superheaters.





Elevation and Cross Sections of the Southern Pacific 2-10-2 Type

The boiler used on Class F-4 is of the straight top type with a slope on the bottom of the middle ring in order to provide a sufficiently deep water space under the combustion chamber. This increases the shell diameter from 90 in. at the first ring to 100 in. at the throat. On the second ring, which carries the dome, the longitudinal seam is placed on the top center line and is welded throughout its length, in addition to being reinforced by inside and outside welt-strips. The inside strip is wide enough to cover the entire area under the dome base. The auxiliary dome is on the third ring immediately ahead of the combustion chamber and is placed over a 15-in. manhole so that the boiler can be easily entered for inspection purposes.



Interior of the Cab

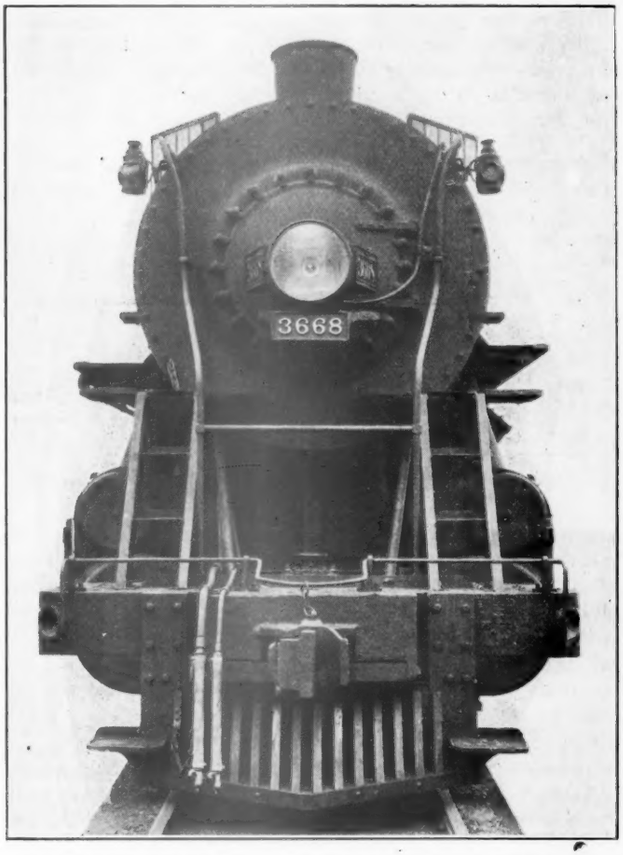
In the construction of the boiler unusually large plates were used. The firebox crown sheets and side sheets are in one piece and the wrapper sheet is also made from a single plate. The dimensions of the plates for these parts were 247½ in. by 195½ in. by ⅜ in. and 291 in. by 149 in. by ⅝ in. respectively.

The combustion chamber is 64 in. long and has a complete installation of flexible bolts in the water space, while four rows of such bolts stay the front end of the crown. The throat is also stayed by flexible bolts and they are used in the breakage zones in the sides and back. Two fusible plugs are applied, one at the front end of the crown and the other over the outlet of the oil-burner. The oil-burning equipment is arranged in accordance with Southern Pacific standards.

The feedwater is supplied by one non-lifting injector placed on the right-hand side, and one combined open type feedwater heater and pump of 7,200 gal. capacity per hour, placed on the left side. The pump is supplied by a steam pipe leading from a valve in the turret. With the heater and pump and air reservoirs located on the left-hand side, it has been necessary to place the two cross-compound air compressors on the right-hand side. These are low down under the running board so that they do not obstruct the engineman's vision when looking ahead.

With limited space available, special attention had to be given the arrangement of the piping in order to render it accessible and at the same time not exceed the limit of width. On the left side the feedwater heater requires a four-inch feed pipe which is placed under the running board and above one of the air reservoirs. The latter is hung on cast steel supports which are specially designed to provide room for the feed pipe. On the right-hand side there is no room to place the four-inch booster exhaust pipe outside the frames, and it is therefore placed between them. This pipe enters the smokebox and discharges into an annular opening surrounding the main exhaust nozzle.

The cylinders are fitted with cast iron bushings and the pistons have cast steel heads and cast iron bull rings. The piston rods, main crank pins and driving axles are heat treated and hollow bored. Flanged tires are used on all the wheels, notwithstanding the fact that the locomotives are designed to traverse 20 deg. curves. The lateral play between rails and flanges on the first, third and fifth pairs of drivers is ⅞ in. and on the second and fourth pairs and the truck wheels, ⅝ in. There is in addition a lateral play between wheel hubs and boxes, including shoe and wedge play, of 1-13/16 in. on the front drivers and 5/16 in. on the remaining pairs. Long main driving boxes are applied, the journals measuring 13 in. by 22 in., while the lateral motion boxes on the first driving axle have journals 11 in. by 20 in.



The Head End Is Arranged for Convenience and Safety

The rear truck is of the Delta type and is equalized with the three rear pairs of driving wheels. In this design the back equalizing beams are fulcrumed on the truck frame and the main frames are supported on the truck center pin and also on two sliding supports placed wide apart back of the truck wheels. The load on the center pin is transferred through a spherical bearing. The booster is sup-

ported on the rear transverse member of the truck frame which is depressed sufficiently to provide the necessary clearance.

The piston valves are 15 in. in diameter and are set with a maximum travel of 7 in. and a constant lead of ¼ in. Walschaert valve gear is applied and is controlled by the Ragonnet power reverse mechanism.

The main frames are of massive construction with a uniform width of 6 in. and a maximum depth under the cylinder saddle of 14 in. A cast steel rear frame cradle is applied.

A comparatively short cab is used, but it has large window openings in the sides and special attention has been given the arrangement of the fittings. The steam turret is placed outside the cab and the various valves have extension handles which are clearly labeled. The lubricator has seven feeds, including those to the water pump and the booster engine.

The maximum width over the cab boards is 10 ft. 10 in and the overall height of the locomotive is 16 ft. 4 in.

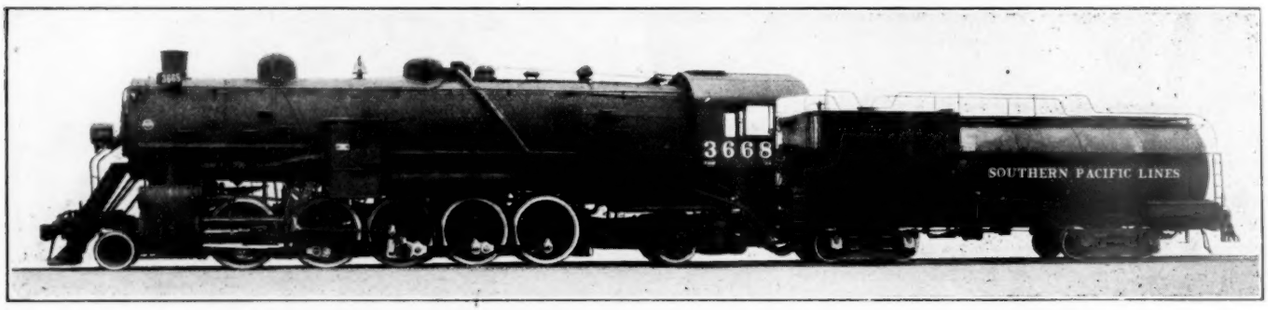
The tender is notable both because of its design and capacity. It is of the cylindrical type, carrying 4,000 gal. of fuel oil and 12,000 gal. of water. The water tank has a diameter of approximately 8 ft. 6 in. and an overall length of 36 ft. 7¾ in. It is carried on a cast steel frame made in one piece with the bumpers and the transverse bolsters which serve as tank supports. The transverse distance over the outside edges of the two longitudinal frame members is 51 in. and the ends of the front and back bumpers are braced by diagonal members which join these

Boiler:	
Type	Straight-top
Steam pressure	200 lb.. per sq. in.
Fuel	oil
Diameter, first ring outside	90 in.
Firebox, length and width	132 in. by 90 in.
Combustion chamber, length	64 in.
Tubes, number and diameter	261—2¼ in.
Flues, number and diameter	50—5½ in.
Tubes and flues, length	21 ft. 0 in.
Grate area	82.5 sq. ft.
Heating surfaces:	
Firebox, incl. comb. chamber	381 sq. ft.
Tubes and flues	4,722 sq. ft.
Total evaporative	5,103 sq. ft.
Superheating	1,329 sq. ft.
Comb. evaporative and superheating	6,432 sq. ft.
Tender:	
Water capacity	12,000 gal.
Fuel capacity	4,000 gal.

Visitors from Chile

On Saturday afternoon four representatives of the Chilean State Railways arrived at the pier for an inspection of the exhibits. The party included Manuel Trucco, director general; Carlos Schneider, assistant superintendent of motive power; Enrique Palma and Dominigo Santa Maria, inspecting engineers. They were accompanied by Charles R. Cullen, manager of the Baldwin Locomotive Works at Santiago, Chile.

Messrs. Schneider, Palma and Santa Maria are in this country for the purpose of inspecting the consignment of



A Powerful, Efficient Locomotive for Freight and Passenger Service on Heavy Grades

longitudinal members at the frame truck bolsters. The trucks have cast steel frames with swing bolsters. They are of the equalized pedestal type, fitted with both helical and triple elliptic springs. The journals are 6½ in. by 12 in. Side bearings are used on the rear truck only. The weight of the tender loaded is about 223,000 lb.

The pricinpal dimensions and weights are as follows:

Cylinders, diameter and stroke	29½ in. by 32 in.
Valve gear	Walschaert
Valves, kind and size	Piston, 15 in. diameter
Weights in working order:	
On drivers	306,000 lb.
On front truck	31,500 lb.
On trailing truck	60,500 lb.
Total engine	398,000 lb.
Tender	223,000 lb.
Tractive effort	71,150 lb.
Tractive effort with booster	84,650 lb.
Wheel base:	
Driving	22 ft. 10 in.
Total engine	42 ft. 4 in.
Total engine and tender	82 ft 7½ in.
Wheels, diameter outside tires:	
Driving	63½ in.
Front truck	33 in.
Trailing truck	45½ in.
Tender	33 in.

39 electric locomotives being built by the Baldwin-Westinghouse people for the Chilean electrification between Valparaiso and Santiago. These engines are to operate on 3,000 volts direct current and have a horsepower of 2,000. The section of track over which they are to operate is 150 miles in length, including branch lines, and there is a heavy grade for about 15 miles with a maximum grade of 2.4 per cent. It is anticipated that this line will be completely electrified by September, 1923.

The Chilean State Railways have entered upon a more or less extended program of electrification. After the Santiago-Valparaiso line is complete, a new district of 200 lines in length, including branch lines, will be electrified between Santiago and Talca. The electrification of the Chilean railways is an economic necessity, for the price of locomotive coal is almost prohibitive, averaging between eight and ten dollars per ton on a locomotive. There is an abundance of water power available in Chile for the railway electrification, and the electric locomotives are to be equipped for regenerative braking. Mr. Trucco, who is not assigned particularly to the inspection of the locomotives, is making a tour of inspection throughout the country visiting particularly the electrified railways. He has already spent some time on the Pennsylvania and the Norfolk & Western.

Welding Men Meet

AN UNOFFICIAL but highly successful meeting of railroad and supply men interested in welding was held on the pier at five o'clock on Saturday afternoon. About 50 men assembled at Booth No. 1 and then retired to the east balcony where the meeting was held. The meeting was suggested by the fact that there will be no report on welding presented during this convention and because of the large amount of welding apparatus on exhibit. C. A. McCune, president of the American Welding Society, was asked to explain the aims and activities of that society and of the American Bureau of Welding, after which the temporary chairman resigned in his favor.

The American Welding Society

With respect to the American Welding Society, Mr. McCune said: "When mention was made of the welding interests present at the convention this year we began checking them up. Besides the welding apparatus manufacturers and the railroad interests, there are also several companies which are exhibiting welded devices, such as the Locomotive Firebox Company, the Symington Company, the Flannery Bolt Company and a few others. Combined they represent about nine per cent of the total exhibits. These figures, I imagine, are rather startling.

"I have noted in the daily issues of the *Railway Age* the address of Mr. Tollerton on co-operative research. He said that the research should be conducted at some central bureau, but that it should not interfere with any individual interests, which was perfectly right; that is the object of the American Welding Society, to assist in co-operative research and at the same time not stand in the way of any individual research.

"The American Welding Society is a national body, whose object is to promote welding—that is, promote it by standard methods, standard specifications for material and generally the laying out of standard methods of handling the process, which will be of assistance to the entire welding industry. The American Bureau of Welding, which is affiliated with the National Research Council, Engineering Division, is the research body of the American Welding Society. All the information gathered and all the research accomplished through the American Bureau of Welding is published by the National Research Council, Division of Engineering, through the American Welding Society. Thus the object of the American Welding Society is to set forth all the valuable and authentic information that it can possibly gather as a result of co-operative research."

W. E. Symons, consulting engineer, supplemented Mr McCunes statements by saying: "With respect to the number of exhibits and percentage or relation it bears to the whole, I think President McCune has been very conservative in his statement; in addition to those he mentioned—18 exhibitors of welding equipment—about six per cent, we might safely say that a larger percentage are interested in welding. They are interested because there are many concerns represented that do not make welding equipment in addition to those mentioned by Mr. McCune, but which use welding processes in their shops in the manufacture of other equipment. In fact, there are very few lines of manufacture today where welding is not used in some manner." Mr. Symons concluded his remarks by pointing out the benefits which members derive from the American Welding Society and showed the need for increasing its personnel. He spoke of the society as pure democracy.

Metal and Thermit Corporation

J. H. Deppeler, also enlarged on the needs and possibilities of the American Welding Society. He said: "There is one thing which has appealed to me greatly during the past few years. When we first started this welding society we thought of the conflicting interests—the gas, electric and thermit welders. We in the Metal & Thermit Corporation and in the Westinghouse and General Electric Company, and in others, felt that if we would really co-operate as the society tried to make us—and our individual concerns were further advanced than some of the others—we might lose business. I think it is really essential that we should all know the other fellow's process and that we ought to help boost his work. We can all boost welding by boosting each of the processes instead of only our own."

C. J. Holslag, Electric Arc Cutting and Welding Company, enlarged on Mr. Deppeler's remarks by saying that after the members of the Welding Society got acquainted they all discovered that their competitors were normal human beings that did not wear horns as they had suspected.

W. A. Slack, Torchweld Equipment Company, enlarged on the explanation of the activities of the American Welding Society by telling of the journal published by it and describing its purpose.

Welding in Construction

C. M. Rogers (Locomotive Firebox Company) said in part: "Welding is quite an essential factor in the Nicholson thermic syphon, inasmuch as there is a large amount of welding and the practice is to weld instead of rivet sheets in the firebox. We are, like many others, entirely neutral with respect to the method of welding. In our travels about the country looking after the application of syphons, we see welding of great variety and there is an indication that we are still at a point where there is considerable development possible and very much needed. On the other hand, we find places where the art has been developed to a point of great efficiency and this is well proved in the service results that we get in the use of the syphon. It certainly is a splendid test if welding a device of this kind, as well as other devices, passes the requirements and comes through with success. The field is broad and I am glad to see the art recognized in just such a way as this at this convention." Mr. Rogers also spoke on the value of reclaiming equipment by welding.

Welding and Welding Materials

The principal address of the meeting was made by H. T. Bentley, superintendent of motive power and machinery, Chicago & Northwestern. He said:

"I don't know what the railroads of this country would have done during the times when we were hardly able to get material of any kind if it had not been for the welding apparatus and appliances brought into use in the last few years. Mr. Symons says there isn't any question but that there is a great need of an organization with just as much concern in the interests of autogenous welding as the Master Mechanics' Association has had for mechanical details and I am very glad to know that there is a national society that now has branches in a good many of the cities which are apparently doing very good work. I sincerely hope that any of you men who have the opportunity of lending your influence to join such an organization will do so, because I am certain it is going to be of benefit to your railroads and to yourselves. I have attended a few meetings at Chicago and I want to tell you that those I have attended have been full of interest. Of course, we go through the shops as officers and we see these things done, but when you go to meetings and find out from the men who are doing the things how they should be done so that failure can be overcome, it is an inspiration.

"It is a money making proposition for you and your

companies to further the interests of the American Welding Society by joining it, or by becoming members of the local sections that may be started in your town. The welding art has a future before it. It is in its infancy now, and some day five or six years hence we will be astounded to know what is being done and what can be done by the autogenous welding processes. I presume that certain jobs can be done better electrically and that for others the gas method of welding is superior. Each system has its uses and it is up to us to learn which will do the work the most economically and safely.

"There is one thing, however, I am a little bit worried about and that is welding wire and welding rods. Sometimes we seem to get a batch of welding material that is absolutely first-class, and then we will get it from the same place and it doesn't seem to answer the purpose at all. I presume in time it will mean specifications for all kinds of welding rods for the various processes. I realize that welding rods that may be first-class for a certain job may be absolutely improper for some other welding job, so that it seems to me that we have got to get together. We should have some sort of specifications so that when we are going to do a certain job, say on steel, we will know what kind of materials to use to give the best ductility, weld, etc.; similarly for cast iron welding.

"Great progress has been made, but once in a while I come across complaints that the welding wire in one batch did not seem to be uniform. That is the greatest thing to contend with. The apparatus is doing splendid work, the torches are good, gases are satisfactory, electric welders seem to be doing splendid work, but the material for welding seems to require a little bit more care in its standardization; if that can be done, I am satisfied that we are going ahead in fine shape."

Mr. McCune responded to Mr. Bentley as follows: "There is a welding wire specification committee which has been engaged in research for two years. There have been many difficulties but their aim is just what Mr. Bentley desires. A welding wire specification has been published by the society. There are certain specifications for gas and one for electric welding, including the various analyses of welding material which have proved satisfactory. We had a meeting in April of all the best minds we could get on welding wire—the wire manufacturers, railroad men, metallurgists and the like—and although our specifications have only been published and in force less than eight months in printed form, this committee could not find any way of improving the specifications.

"There is also a committee now working on specifica- for material to be welded. Its purpose is to determine what kinds should be welded and when it should and should not be welded, and to distinguish between burnt metal and good metal, and we hope to be able some day to present such data. We believe the welding wire specifications as published so far are pretty well advanced, considering that autogenous welding or fusion welding has been a commercial process for only 10 or 12 years and that never before has any orgainzed body, technical or otherwise, made any attempt to prepare specifications for welding material."

Edward Wray, publisher, Railway Purchases and Stores, was asked to present the impressions of an observer in the stores department. Mr. Wray said:

"It does not take any amount of thought to appreciate the importance of welding when we see a large and important machine put out of commission by a broken part which may be repaired by welding for a few dollars. It does not require any argument to sell welding in that case. Welding is coming in on such work as the reclamation of materials. The railroads are beginning now to use welding extensively in the reclamation of all manner of things, such as frogs, couplers, knuckles, crossings and a great many materials are now being repaired and put back into service through welding which were formerly thrown away.

"I am sure that this is going to develop to a far greater extent in the future than it is today. Next week, Tuesday, I believe, the Committee on Reclamation of Division VI—Purchases and Stores, will make its report and I am sure that that committee will consider what articles should be reclaimed and what should not. Without a doubt welding will occupy an important part of the discussion. I hope you gentlemen will be present at some of the meetings and I am sure that the chairman would be pleased to have you take part in the discussion. It is quite an important opportunity for manufacturers of welding equipment and accesories to take part in the advancement of the science in reclamation. Although I am not authorized to extend any invitation for Division VI, having no official standing whatever, except having the trade paper devoted to their interests. I feel sure that you gentlemen will be at least interested in what comes up at that time and that they will be interested in the information that you can give in that connection."

One Man's Gain—Another Man's Loss

W. L. Bliss, U. S. Light & Heat Corporation, related an unusually instructive and amusing incident: "I made a little trip not long ago to the middle west and looked at some interesting pieces of welding in some of the locomotive shops. I witnessed an incident that I think brings out the fact that great economy is possible with welding. The case was that of a couple of railroads that ran into St. Louis. Without mentioning any names, I will call these "Railroad A" and "Railroad B." It seems that Railroad A had on hand a large number of side trucks, say of the Andrews make, that had outlived their guarantee. The tension members were cracked underneath and they were ready for the scrap heap, as there was no possibility of getting any further settlement with the manufacturer. They had run as long as they had been expected to run. I heard that those truck sides cost, new, $32 a piece and that Raliroad A sold 5,000 of these to a junk man in St. Louis for $4 a piece.

"The other railroad, Railroad B, had a storekeeper who was well acquainted with the junk men in St. Louis and who knew this particular junk man well. He found out the price paid to Railroad A for the side frame and reported it to his management and got permission to buy the 5,000 truck sides for $5 a piece. These trucks were then transferred to one of the shops of Railroad B that was well equipped for reclaiming and storing this kind of salvage, and at an expense of $8 they restored all side frames to perfectly good service."

W. C. Arp Dead

W. C. Arp, retired superintendent of motive power of the Pennsylvania Railroad, died at his home in Terra Haute, Ind., at 10.50 p. m. on Friday, the 16th, after a lingering illness. He was one of the oldest members of the association and had attended all conventions until this year. Mr. Arp was retired from service on the Pennsylvania because of pension requirements on July 1, 1918. He was succeeded by J. E. Mechling, who is now in attendance at the conventions. Mr. Arp was in the service of the Pennsylvania for 48 years, starting as an apprentice at Williamsport, Pa.

The Machine Tool Market

SPEAKING of the machine tool market and the present demand for machine tools, Ernest F. DuBrul, general manager, National Machine Tool Builders' Association, had the following to say:

"Many railroad master mechanics are telling the machine tool builders that they want a lot of tools for the railroad shops but that they are told by the purchasing authorities that the purchases will be held up until machine tool prices come lower than they are. I believe the purchasing authorities are deceiving themselves as to the present situation. The machine tool builder may likewise be deceiving himself, if he does not keep his eye on the labor situation, particularly as affecting the larger types of machines that are not now in stock and never are built for stock.

"The labor situation is such that if the market had a lot of orders right now, the machine tool builder could not find a sufficient supply of skilled labor of the sort necessary to build these tools. During the war, and for the year after the war, the machine tool builder did not train any general workmen—skilled all-round mechanics—so that as compared to the supply of this sort of labor in 1914 we have a deficiency.

"The reason is very obvious. During the war machine tool orders came in in much larger quantities than ever before. This prompted the machine tool builder to take men in and train them in special operations. He had neither the time nor the disposition to train a more general class of workmen, as he had done before the war. Demand from now on, dropping back to the smaller quantities that are more normal to the machine tool business, will require the general workman rather than the specialist.

"During the war the general machinist moved up the scale. He became a tool maker or he became a foreman, either in the machine tool shop or in some war industry shop, his place in production being taken by the specialist. Then, after the slump, these specialists went back to the farms or they are now engaged in the building industries, or elsewhere, and machine tool builders who are putting on more men, or trying to, find difficulty in getting these men back into the machine tool industry, which has been so deeply depressed for so long a period.

"To coax them back much higher wages will have to be paid to make up for the irregularity of employment, and to overcome their preference for the jobs they may now be filling. Not only that, but the heavy tools of course require much more general men, because they cannot be produced in quantities, as in the case of the lighter tools. The railroads need the tools right now, and it is short-sighted policy to defer the purchasing any longer, because as business picks up the available mechanical labor will be absorbed by the other industries and the bid the machine tool builder will have to make will have to be much higher. Such a policy of delay will merely concentrate the demand for machine shop labor at a later date, with the usual consequences, instead of spreading it out and making it easier all around. It is the early bird that will get the worm, as usual. The wise buyer, who now gets in his orders will not suffer either from delays in delivery or higher prices that are sure to follow, according to the present outlook on the labor market.

"Another point that must not be forgotten is that the restriction of immigration since the beginning of the war, and the consequent shortage in common labor that is evident in all sections of the country, even with the present amount of activity, is sure to create a demand for labor saving machinery machinery of all kinds; and this of course means a demand for more machinists. At a period of intense activity—if the machine tool buyer waits too long—he will have the privilege of paying extremely high prices to induce production of machine tools, rather than in the present stage of the cycle.

Second Hand Tools

"The purchasing powers seem to imagine that there are a lot of bargains to be found among second-hand tools. As a matter of fact, these are very deceptive bargains. The machine tool builder selling new equipment has nothing to hide, whereas the second-hand dealer selling stuff that he bought "as is," would probably rather not have too close an inspection of what he is offering. Buyers of second-hand machinery should very carefully investigate the history of the machine in question—how long it has run, the class of work that was done on it, whether the long runs were on repetition work, so that the same gears were always used and worn out, whereas other gears might be in relatively good condition.

"This is very difficult information to secure, particularly as it has been whispered that certain serial numbers on machine tools bought by purchasers do not correspond to the numbers that the machines bore when they left the factory. Of course, legitimate dealers would not stoop to this, but it only shows how necessary it is for the purchaser to look carefully, not only into the tool, but also to be well posted on the methods of the dealer who is offering it."

Reductions in Railway Wages to Date

THE RAILROAD LABOR BOARD has announced reductions in the wages of the station and clerical forces, the stationary engine and boiler forces, and the signal department employees. The reductions in wages made by the Board in its recent decision are now estimated officially as follows:

Clerical and Station Forces	$24,336,317.43
Maintenance of Way and Structural and Unskilled Forces	48,898,873.44
Shop Employees	59,669,347.32
Stationary Engine (steam) and Boiler Room Employees	551,954.76
Signal Department Employees	1,532,428.36
Total	$134,988,921.31

The latest decision of the Board authorizes reductions in the wages of clerical and station forces, stationary engine and boiler room employees, signal department employees, floating equipment employees, train dispatchers, dining car and restaurant employees, and miscellaneous groups not specifically included in any of these classifications.

Reductions of three cents per hour in the rates of pay of storekeepers, assistant storekeepers, chief clerks, foremen, subforemen and other clerical supervisory forces, clerks with an experience of two or more years, train and engine crew callers, assistant station masters, train announcers, gatemen, and baggage and parcel room employees (other than clerks), are ordered by the decision to be effective July 1.

Reductions of four cents per hour are authorized in the rates of pay of clerks with an experience of one year and less than two years, clerks whose experience is less than one year, janitors, office, station and warehouse watchmen, employees engaged in assorting way-bills and tickets, operating appliances or machines for perforating, addressing envelopes, numbering claims and other papers, gathering and distributing mail, adjusting dictaphone cylinders, and other similar work, office boys, messengers,

chore boys, other employees under 18 years of age, filling similar positions, station attendants, station, platform, warehouse, transfer, dock, pier, storeroom, stockroom, and team track freight handlers or truckers, and others similarly employed, and all common laborers in and around stations, storehouses and warehouses, not otherwise provided for.

Clerks without previous experience hereafter entering the service will be paid a monthly salary of $60 per month for the first six months, and $70 a month for the second six months, instead of the old rate of $67.50 and $77.50.

Telephone switchboard operators under the new rates are guaranteed a minimum of $85 a month, those now receiving higher wages not to be reduced.

The differential between truckers and sealers, scalers and fruit and perishable inspectors, stowers or stevedores, callers or loaders, locators and coopers, are to remain the same under the terms of this order.

In the group designated as "Stationary Engine and Boiler Room Employees" reductions of two cents an hour have been authorized in the wages of stationary engineers, stationary firemen and engine room oilers, and boiler room water tenders and coal passers.

In the signal department, leading maintainers, gang foremen and leading signalmen, signalmen, assistant signalmen, signal maintainers, and assistant signal maintainers, will receive reductions of five cents an hour and helpers six cents an hour. No reduction is authorized in the wages of signal foremen, assistant signal foremen and signal inspectors.

All of the disputes which were before the board relating to the wages of floating equipment employees are remanded for further negotiation.

The Board ruled that existing conditions do not testify any reduction at this time in the wages of train dispatchers.

In regard to miscellaneous employees, the Board ruled that "for miscellaneous classes of supervisors and employees in the hereinbefore named departments properly before the Board and named in connection with a carrier affected by this decision, deduct an amount equal to the decreases made for the respective classes to which the miscellaneous classes herein referred to our analysis."

A dissenting opinion by two labor members and an analysis of the dissenting opinion by the majority were appended to the decision. The text of the decision and the dissenting opinion and its answer will be described fully in the regular issue of the *Railway Age*.

Chamber of Commerce Railroad Committee

ANNOUNCEMENT HAS JUST been made of the appointment of the new Railroad Committee for the Chamber of Commerce of the United States. George A. Post, who has given so much of his time and energy to this work in the past, is continued as the chairman of the committee. The other members are: Harry A. Wheeler (Union Trust Company), Chicago; Carl R. Gray (Union Pacific), Omaha; W. W. Salmon (General Railway Signal Company), Rochester, N. Y.; Charles E. Lee, East Orange, N. J.; Emory R. Johnson (University of Pennsylvania), Philadelphia; F. C. Dillard, Sherman, Texas; Walter S Dickey, Kansas City, Mo.; Alexander W. Smith, Atlanta, Ga.; E. J. Frost, Boston, Mass.; John E. Oldham, Boston, Mass.; W. J. Dean, Minneapolis, Minn.; T. C. Powell (Erie Railroad), New York; and George W. Simmons (Simmons Hardware Company), St. Louis.

Cornell Dinner

THE CORNELL DINNER will be held this evening at the Traymore Hotel at 7 o'clock. Twelve Cornellians have registered up to the present time and in order that proper accommodations may be made, any further reservations should be made as early as possible.

Annual Meeting of the R. S. M. A.

THE ANNUAL MEETING of the Railway Supply Manufacturers' Association was held in the Greek Temple Saturday noon and officers were elected for the ensuing year. Charles W. Beaver, of the Yale & Towne Manufacturing Company, of New York, was elected president and L. S. Wright, of the National Melleable Castings Company, Chicago, was elected vice-president. They will take office on the first of September, 1922, the beginning of the fiscal year of the association. A past president's badge was tendered John F. Schurch, the retiring president.

District elections were also held for the members of the Executive Committee from District 2 (New York and New Jersey) and District 4 (Ohio, Indiana and Michigan). Charles C. Castle, of the National Railway Appliance Company and Gilbert E. Ryder of the Superheater Company, were elected executive committee members from District 2. L. D. Kingsley of S. F. Bowser & Co., Inc., Fort Wayne, Ind., and George T. Johnson, of the Buckeye Steel Castings Company, Columbus, Ohio, were elected executive committee members from District 4.

Consolidated Machine Tool Corporation of America

WE ARE ABLE definitely to announce the formation of the Consolidated Machine Tool Corporation of America rumors concerning which have been current for some time. The corporation is capitalized for, $30,000,000 and includes the Betts Machine Company, the Colburn Machine Tool Company, Hilles & Jones Company, Modern Tool Company and Newton Machine Tool Works, Inc., all of which are represented here at Space 91-101 in Machinery Hall.

This new consolidation is one of particular importance to the railway field, for it brings under the head of a single corporation a wide variety of tools that are especially adapted to railway shop use. The new combination will handle heavy-duty and wheel and axle lathes; boring mills; slotters; planers; including crank and plate edge; heavy duty drilling machines; internal and external cylindrical grinding machines; horizontal and vertical milling machines; horizontal and vertical punches; shears of various types; cold saws; bending and straightening rolls; automatic die heads, and miscellaneous small tools, and a complete line of shop equipment.

The company has recently engaged offices at 17 East Forty-second street, New York, and while the officers of the corporation have not yet been elected, it is anticipated that W. H. Marshall, formerly president of the American Locomotive Company, will be chairman of the board, and C. K. Lassiter, who is resigning his position of vice-president in charge of manufacture of the American Locomotive Company, will be president.

Registration, American Railway Association, Div. V, Mechanical

(*Continued from Page 1552*)

Edmondson, O. N., Asst. M. M., Penn., Marlborough.
Edmondson, W. G., Asst. Engr. M. P., P. & R., Craig Hall.
Elizondo, E. L., Asst. P. A., National Rys. of Mex., Ambassador.
Elmora, D. R., Asst. to G. M., Fruit Growers Exp., Calvert.
Ennis, J. E., Engr. of Equip. Claims, N. Y. C., Lewellyn.
Epright, A. W., Sup. Scales & Weigh., Penn., Craig Hall.
Farrell, W. J., Ass't. Secy., Div. 6 Amer. Ry. Asso., Traymore.
Feeley, M. P., Genl. Eng. House Fore., D. L. & W., Princess.
Flynn. H. A., Genl. Sup. Air Brakes, D. & H., Pennhurst.
Foltz, T. F., Elec. Engr., Wash. Ter. Co., 4017 Ventnor Ave.
Fowler, W. E., Ch. Engr., Montour.
Fpahler, F. P., Supt. L. Maint., B. & O., Princess.
Francis, G. E., Fore., Penn.
Frier, T. J., P. A., Wabash, Ambassador.
Galloway, A. K., M. M., B. & O., Haddon Hall.
Galloway, C. W., V. P. Oper., B. & O., Marlborough.
Geib, F. A., G. F., Penn., DeVille.
Geist, J. R., Spec. Pass. M. P. Insp., B. & O., Louvan.
German, N. J., V. P., Montour.
Gettys, H. L., M. M., Virginia, Haddon Hall.
Gill, C. A., S. M. P., B. & O., Marlborough.
Goodchild, A. A., G. S., C. P., Haddon Hall.
Gordon, H. D., Ex. M. M., Penn., Strand.
Griswold, W. W., P. A., W. & L. E., Dennis.
Grubbs, F. C., Material Agt., Penn., Ambassador.
Gurnee, W. H., Genl. Joint Car Fore., Cent. New Eng., Princess.
Hall, W. K., Gen. Sup. of Stores, U. P., Traymore.
Hammond, F. S., P. A. & Genl. Store., P. S. & N., Strand.
Hanegan, Guy W., Gen. Store., M. & St. L., Blackstone.
Hanna, H. L., Asst. Eng., Nickel Plate, Alamac.
Hanrahan, James L., Reporter, A. R. A., Runnymede.
Hanson, F. E., Asst. P. A., Southern.
Harrison, W. R., M. M., Sante Fe.
Hartman, W. J., Air Brake Insp., C. R. I. & P., Pennhurst.
Hauth, W. A., Fore. Car. Rep., Penn., Martinique.
Hays, Howard F., Gen. Store., G. N., Alamac.
Heazlitt, B. Y., P. A., Ky. & Ind., Term. Marlborough.
Helme, Chas., M. M., L. V., St. Charles.
Henkins. F. W.,Asst. Ch. of M. P., Penn., Dennis.
Henry, C. L., Asst. M. M., East Div., Penn.
Herlihy, J. J., M. M., B. & O., Alamac.
Herold, E. E., Stationer, B. & O., Strand.
Holzemer, J. F., P. A., Tenn. & Ohio Cent., Traymore.
Hopkins, W. A., Supply Agt., M. P., Traymore.
Hornig, E. C., Asst., to Mgr. Pur. & Sup., N. Y. C., Chalfonte.
Hornville, C. H., Asst. to Gen. P. A., A. T. & St. Fe, Alamac.
Howe, C. A., P. A., Pitts. & West Va., Ambassador.
Howe, John, Supt. Shop, B. & O., Marlborough.
Huffman, R. S., Asst. Gen. Store., N. Y. C., Pennhurst.
Hurst, G. E., M. M., Penn., Strand.
Jackson, J. C., Gen. Strkpr., G. T., Alamac
Jackson, R. R., Dist. Store., B. & O., Ritz.
Jeffrey, Thos., G. Insp., D. L. & W., Clearfield.
Jeffries, W. E., Asst. Chf. Clk. P. A., B. & O., Strand.
Jones, E. S., Gen., Car Insp., B. & A., Pennhurst.
Kahler, C. P., Elec. Eng., O. S. L., Chalfonte.
Keene, E. F., Gen. Car Fore., B. & O.
Kelker, J. F., Gen'l. Fore. East Div., Penn.
Kelley, Wm. M., G. F., Penn.
Kendal, A. A., M. M., C. P., Ambassador.
Kenzel, C. H., E. J. & E., Chelsea.
Kneass, Strickland L., Asso. Member, William Sellers Co., Brighton.
Korha, A. J., Asst., Gen. S. K., C. M. & St. P., Carlton.
Kramp, F. C., Dist. Storekpr., S. P., Amabassador.
Langan, P. J., Genl. A. B. Supv., L. & W., Traymore.
Lehman, E. H., Gen. Store., N. Y. C., Traymore.
Lehr, Harry W., G. F., Penn.
Loux, John P., M. M., L. V., Traymore.
McAllister, J., Gen. Fore., N. Y. C., Traymore.
McAuliff, J. W., Asst. Genl. Material Agt., Penn., Traymore.
McGann, C. E., M. M., B. & O., Ambassador.
McGoff, J. H., Mech. Supt., A. T. & S. F., Traymore.
McGraw, M. J., S. M. P. & C., W. & L. E., Strand.
McNaughton, Jas., V. P., Baldwin Loco. Wks., Ritz.
Mansfield, Hector, A. T. M., P. R.
Mayer, F. A., G. M. B., Southern, Princess.
Mengel, J. C., M. M., Penn., Marlborough.
Minshull Phillip, M. M., N. Y. C. & W., Haddon Hall.
Monroe, E. T., Chf. Clerk Pur. Dept., B. R. P., Traymore.
Montague, W. T., Asst. Eng. M. P., Penn. East. Ohio Div., Haddon Hall.
Morehead, A. S., Asst. Gen. Store., I. C., Dennis.
Morris, J. M., M. M., Penn., Ambassador.
Murphy, J. P., Gen. Store., N. Y. C., Traymore.
Nichols, J. H., G. S. K., Nickle Plate, Chelsea.
Nicholson, S. M., Dis. Store., Penn., Holmhurst.
Nimmo, J. K., M. M., At. T. & Sante Fe.
O'Neill, W. J., M. S., C. R. I. & P., Strand.
Orr, J. J., Gen'l. Fore. B. M., D. L. & W., Worthington.
Packard, W. F., Haddon Hall.
Painter, J. H., S. S., A. C. L., Chalfonte.
Parker, H. H., M. M., N. & P. Belt Line, New England.
Parker, William J., Asst. M. M., East Div., Penn., Elberon.
Patten, C. S., S. M. P., S. A. L., Traymore.
Patterson, J. H., Gen. Fore., N. & W., Green Gables.
Pearce, N. C., Dir. of Pur. of Stores, C. & O., Traymore.
Pearson, E. J., Pres., N. Y. N. H. & H.
Peck, Frank S., Dist. Store., C. M. & St. P., Haddon Hall.
Peck. W. F., Sup. Air Brakes, B. & O., Bouvier.
Peddle, C. R., P. A., Penn. Southwest., Marlborough.
Phelps, W. G., P. A., Penn., (Cent. Reg.) Traymore.
Phillips, A. T., Asst. Gen. Fore., A. T. & Sante Fe.
Phipps, J. W., McB. Insp., B. & O., Louvre.
Prentice, W. H., Insp. M. C. B. Clear. House, Penn. Star Cottage.
Prentiss, George N., Eng. of Tests, C. M. & St. P., Strand.
Prentiss, George N., Eng. of Tests, C. M. & St. P.
Purcell, Mark, Gen'l. A. B. Insp., N. P.
Ramchart, E. A., M. A., P. & L. E., Princess.
Raymond, A. A., Asst. M. M., N. Y. C., Haddon Hall.
Reardon, F. C., S. Stores, D. & H., Pennhurst.
Redding, D. J., Asst. Sup. M. P., P. & L., Strand.
Reed, F. D., Vice Pres., C. R. I. & P., Traymore.
Reinhart, Bert, Asst. Fore. M. P. & R. E. Dept., P. & R.
Rey, H. E., G. S., A. T. & S. F., Traymore.
Robinson, W. L., Supt. Fuel & Loco. Pere, B. & O., Runnymede.
Roesch, P. F., West. Mgr., Standard Stoker Co., Blackstone.
Rogers, S. M., V. P., E. J. & E., Ambassador.
Roush, C. S., Asst. M. M., Penn. Haddon Hall.
Sadler, J. H., Mech. Insp., St. L. & S. E., Dennis.
Sandhas, N. L., Gen. Insp., C. R. R. of N. J., Bothwell.
Scott, G. E., P. A., M. K. & T., Traymore.
Sedden, I., P. A., C. St. P. M. & O., Traymore.
Shapland, E. S., Div. Store., I. C., Dennis.
Shreeve, J. C., M. M., E. J. & E., Chelsea.
Shriver, Wm., Air Brake Inst., B. & O., Bothwell.
Shultz, G. H., Pur Dept., Penn., Marlborough.
Skinner, L. H., P. A., Southern, Ambassador.
Smith, Adam F., Storekeeper, P. & R., Windemere.
Smith, B. T., G. F., Penn.
Smith, C. B., G. F., B. & O.
Smith, John L., Sup. M. P. & Eq., Pitts, I. & Nor., 125 S. Illinois.
Smith, M., P. A., Penn. Chelsea.
Smith, P. F. Jr., Works Mgr., Penn., Brighton.
Speaks, H. E., Gen. Mgr., T. & Ohio Cent., Traymore.
Sprong, J. White, P. A., D. & H., Ritz.
Stark, C. W., S. M. E., N. Y. C., Berton.
Steen, W. E., Dist. Store., B. & O., Blackstone.
Stewart, J. A., G. S. M., N. Y. O. W., Haddon Hall.
Stokes, W. D., Asst. G. S., I. C., Dennis.
Stuart, J. C., Gen. Store., C. B. & Q., Traymore.
Summerhays, W. A., Lumber & Tie Agt., I. C., Traymore.
Taylor, W. H., Storekeeper, Penn., Holmhurst.
Thornley, E. W., Asst. Pur. Agt., B & O., Haddon Hall.
Toomey, T. H., G. F., Penn.
Towsley, A. W., Asst., to V. P., C. R. I. P., Chalfonte.
Veil, Moses, C. S. K., N. Y. O. & W., Haddon Hall.
Velasco, J. M., P. A., Notl. Ry of Mexico, Ambassador.
Vlair, H. A., Super. Safety Appl., B. & B., Alamac.
Wade, J. W., G. S., Nor & West., Traymore.
Wallis, J. T., Ch. of M. P., Penn.
Wallschlaeger, W. O., Insp. of Stores, C. M. & St. P., Haddon Hall.
Walsh, P. H., Gen. B. Store., A. C. L., St. Charles.
Walton, N. S., Sup. Air Brakes, B. & A., Bothwell.
Wanamaker, H., Dis. S. M. P., N. Y. C., Traymore.
Warren, L. C., Gen. Mgr., S. & N. Y., Traymore.
Williams, A. C., Store, West., G. I., Alamac.
Williams, C. B., P. A., C. R. R. of N. J., Traymore.
Williams, E. G., Eng. M. P., Penn., Dennis.
Wonnell, G., Storekeeper, Penn., Ambassador.
Wood, A. J., Prof. Mech. Engr., State College, Pa., Arlington.
Woodard, R. H., Storekeeper, G. T., Alamac.
Wray, R. W., M. M., Penn., Strand.
Wright, C. S., G. S., E. J. & E., Chelsea.
Yeaman, C. W., P. A., Belt Ry of Chi., Dennis.
Young, C. B., Gen. Mech. Engr., C. B. & Q., Traymore.
Young, James Jr., M. M., Penn., Strand.
Young, J. B., Eng. of Tests, P. & R.
Young, W. H., Asst. Store., Penn.
Zeigler, C. J., Chf. Elect., F. E. C., Marl.

Special Guests

Aberle, Charles, Asst. Fore., C. R. R. of N. J., Terminal.
Anthony, Garrett S., F. M., P. & R., Strand.
Armstrong, W. H., Draftsman, B. & O., Welsboro.
Auman, Wm. S., Foreman, P. & R.
Baldinger, Stephen, Clarindon.
Barrow, T. H., Insp., B. & O., Schlitz.
Beam, J. A., For., Penn.
Beatty, James R., Mach., P. & R.
Beer, Charles P., Motive Power Dept., P. & R., New Roberts.
Beirns, G., For., C. R. R. of N. J., Reading.
Beith, Jr. Alexander, For. Elec. Trac., Penn.
Belk, M. S., Genl. Air Brake Inst., Southern, Haddon Hall.
Bickell, C. H., G. P. A., Tidewater Oil Co., Chelsea.
Black, Wm. Jr., Haddon Hall.
Boadevex, L. A., Gang Fore., Penn., Aredale.
Bogart, J. Vander, Gen. For. Elec. Div., N. Y. C., Craig Hall.
Bond, R. J., Div. Eng., West Jersey & Seashore.
Boner, Earle E., Train Disp. Reading Div., P. & R., Sterling.
Bowers, E. F., Fore. P. T. Div., Penn., Islesworth.
Brause, E. W., Eng. House Fore., Penn.
Brendel, Henry, Asst. Fore., Cent. Ry. of N. J.
Brennan, T. J., Secy. to Gen. St. Kr., A. T. & S. T., Craig Hall.
Briggs, Joseph H., Asst. For., P. & R., New Roberts.
Brown, Chas, G., Gen. Sol., Huntington & Broad Top Mt., Chalfonte.
Brown, Thos., Asst. Genl. Fore., P. & R., Stevenson.
Buch, C. A., Sec. Am. Ry Assn., Wash. Div.
Carr, A. J., For., Penn., Haddon Hall.
Carr, W. E., Ch. Clerk, M. C. B., S. A. L., Princess.
Chase, D. K., M. P. Insp., Penn.
Chase, E. P., Asst. Engr., Penn., Pennhurst.
Chauncey, E. R., Clk., Southery.
Childs, H. E., For. Elec., B. & O., Craig Hall.
Collins, M. J., G. P. A., A. T. & St. Fe.
Cotton, W. A., Erie, Marlborough.
Coull, Alexander, For., Eng. House, P. & R.
Cromwell H. T., Asst. M. M., B. & O., Chalfonte.
Cullen Peter V., For., C. R. R. of N. J.
Curtis, James, C. M. & St. P., Traymore.
Curtis, Paul, C. M. & St. P., Traymore.
Daubert, S. E., Foreman, P. & R., Miller Cottage.
Davidson, E. H., Inspr., I. C. C., Martinique.
Davidson, E. H. Jr., I. C. C., Martinique.
Delcher, H., C. Insp. Test Dept., B. & O., Princess.
Detwiller, R. F., Insp. S. M. P., Penn., Martinique.
Dornsife, Ralph A., Drafts., P. & R., Gage.
Dowling, A. J., M. Asst., C. of G.
Dudley. Prof. S. W., Prof. Mech. Engr. Yale Univ., Haddon Hall.
Duffy, A F., Bureau of Safety, I. C. C., Traymore.
Dunn, Charles F., Car Dept. W. & C., P. & R.
Duvall, L. F., Chf. Order Clk., A. C. L., St. Charles.
Edwards, Rudolph, Car Insp., Penn.
Eisman, C. R., For. Car Shop, L. I., Shelburne.

Elliott, J. A., M. S. F., I. C., Haddon Hall.
Elvin, A. C., Eng. House For., Lackawanna, Princess.
Emmerist, E. F., Machinist, B. & O., Craig Hall 333.
Evans, B. C., Chf. Elec., El Paso & Sowest., Dennis.
Eves, R. W., Dist. Elec. Supvr., B. & O., Craig Hall.
Farrell, W. J., Asst. Secy., Div. 6, Amer. Ry. Assn., Traymore.
Fechtig, F. H., P. A., A. C., St. Charles.
Finch, Chas. E., T. R. F., L. I., Clarendon
Fineron, F. W., M. F., L. I., Clarendon.
Fisher, C. D., For., Penn., Bouvier.
Fisher, Earl, Car Insp., P. & R.
Fitz, E. M., Gen. Elec., Penn., Seaside.
Fitzgerald, D. W., Asst. For., Penn., Schlitz.
Foltz, Tage, W. T. Co.
Forde, F. J., Mgr. Purch., Am. Inter. Ry., Traymore.
Freeman, E. H., Statistician, B. & O., Adelford.
Gaines, E. C., For., N. & W., Green Gables.
Galager, Jesse W., C. B. M., N. Y. N. H. & H.
Garrigues, H. H., Supt., Penn.
Gaughan, For., Central of N. J., New England.
Gearhart, J. F., Gen. For. Painter, Penn., Alamac.
Gehrett, F. S., Draftsman, Penn., Breakers.
German, William M., Motive Power Dept., P. & R., New Robert.
Gerringer, Harold L., Appr., P. & R., Gage.
Glenn, J. H., R. F. of E., P. & W. V., Sterling.
Goda, P. H., Asst. G. F., Penn., Seaside.
Goodtzke, LeRoy, Clk. Motive Power Dept., L. I., Clarington.
Goss, F. D., Gang For., Penn., Martinique.
Gotwals, Warren D., C. C. Trans. Dept., P. & R.
Gove, William G., Supt. Equip., B. R. T., Shelburne.
Graham, J. M., Trav. Frt. Agt., C. P., 110 Folsom Ave.
Grant, W. M., For., Wash. Term., Warwick.
Graves, J. R., Leading Draughtsman, M. P. & R. S. Dept., N. Y. C.
Greenfield, H., P. A., D. M. & N.
Greenwalt, W. F., Asst. For., Penn., Healy.
Grove, W. E., For., P. & R., Craig Hall.
Guest, Curtis C., Car Insp., P. & R., Strafford.
Guild, L. V., P. & A., Oregon Short Line, Traymore.
Hagan, John J., Asst. Fore., P. & R.
Hamilton, Chas., Dist. Pass. Agt., Wabash.
Hampton, R., Chf. Joint Insp., B. & O., Emerald.
Happel, Glen A., Asst. For. M. P. D., P. & R., Stanley.
Hardy, R. A., Head Car Drafts., P. & R., Elberon.
Hartley, Capt. H. J., Semet Solvay Co., Ritz Carlton.
Hartley, Lt. Howard, Semet Solvay Co., Ritz Carlton.
Harvey, Bert., Car Insp., P. & R., Schuylkill Valley.
Hassler, H. G., Car Shop For. Phila. Div., Penn., Martinique.
Hattori, Taizo, M. E., Gov't Rep., Japan, Traymore.
Hawk, Chas. D., Monticello.
Hawk, E. Thompson, For. Eng. House, P. & R., Monticello.
Hay, Samuel, Asst. Chf. Clk., C. R. R. of N. J., Arlington.
Heckman, Rueben S., Chf. Clk., P. & R., Elberon.
Hedeman, W. R., Leading Draughtsman, Craig Hall.
Heffelfinger, Harry, Machinist, P. & R. Roberts.
Helbrauk, M. M., S. F., Penn., Alamac.
Heller, H. T., For., Penn., Newfield.
Henderson, M. L., Storekeeper, Penn., Holmhurst.
Hengstler, David, For. Car Repair, Penn., Louella.
Hengstler, John, For., Penn., Louella.
Heskitt, I. Z., Insp., B. & O., Schlitz.
Hess A. L., Sig. Supr., Interbor. Rapid Trans., Traymore.
Hess, Geo. F., S. M. P., Wabash., Traymore.
Hindle, Robert J., Apprentice, P. & R.
Hitz, C. D., Spec. Agt., Penn.
Holder, J. W., Insp. of Loco., I. C. C., Princess.
Holland, N. G., Leading Frt. Draft., B. & R., Runnymede.
Howard, W. J., Spec. Rep. P., Dept., Penn.
Hubert, Frank G., Chf. M. P. Dept., L. I., Clarington.
Hubler, W. E., For. Eng. House, P. & R., Miller.
Hughes, O. W., Asst. Examiner, U. S. Patent Office, Traymore.
Hyneman, Robert M., M. P. Dept., P. & R., New Roberts.
Jennings, Paul U., Layerout M. P. & R. E. Dept., P. & R., Osborn.
John, H. A. Jr., Supvr. of Track, Penn.
Johnson, E. L., Serv. Test Engr., N. Y. C., Watkins.
Jonathan, Saul R., Investigator-Claim Dept., P. & R., Elberon.
Jones, G. R., Insp. of Stores, N. Y. C., Chalfonte.
Jones, H. R., Machine For., D. L. & W., Thompson House.
Jones, L. D., Insp. Test Dept., B. & O.
Jones, L. R., Boilermaker For., C. R. R. of N. J., Edison.
Kahn, Mervin M., Eng. House For., P. & R., Miller.
Kates, John A., M. P. Statistician, Penn., Schenley.
Keenig, Harry Rubon, M. E., G. T., Princes.
Kelly, G. W., Blacks., Fore., C. R. R. of N. J., Sterling.
Kelly, W. A., M. E., Sterling.
Kimbel, N. C., Supt. Mch. & Appron., C. R. of N. J., Sterling
King, John H., Chf. Clk. Main. of Way Dept., Ontario & Western, Craig Hall.
King, J. S., Jr., Insp. Test Dept., B. & O.
Kleber, W., For., C. R. R. of N. J., Edison.
Kokona, M., Member Japanese Delegation, Traymore.
Kolalic, Andrew, Blacks. For., C. R. R. of N. J., Terminal.
Kramer, Harry J., Asst G. F., P. & R.
Kramer, John A., M. P. Dept., P. & R., New Roberts.
Krider, J. S., For., Penn.
Larson, Dr. L. J., S. M. P., Hocking Valley, Traymore.
Laughton, H. H,, Asst. to Vice Pres., Southern, Traymore.
Law, Charles A., Asst. T. M., P. & R., Sterling.
Lawson, A B., Leading Pass. Car Draft., B. & O., Runnymede
Leidinger, Frederick, F. C. S., P. & R., Schuylkill Valley Hotel.
Lentz, W. L., Travel. Insp., M. P. Dept., N. Y. C.
Lerch, G. Palmer, Air Brake Asso. P. & R., Gage.
Lewis, Lawrence, Insp. Mech. Dept., F. E. C., Brighton.
Liddle, James G., Boiler Insp., P. & R., Somerset.
Little, D. A., Gen. For. Painter, Penn., Almanac.
Long, R. M., Air Brake Supv., P. & L. E., Princess.
Love, J. E., Asst. For., Penn.
Lowe, C. I., Sec. to Chf. of M. P. & Equip., B. & O., Princess.
Lowe, J. M., Storekeeper, N. & W., Traymore.
Loy, J. M., Drafts., Penn.
Lyne, S. F., Fore. Car Dept., Penn., Princess.
McConn, T., Asst. For., Penn.
McCraren, Jas. W., Gang Fore., Penn.
McElroy, Frank, Chf. Slk., D. T. L., Traymore.
McFadden, W. N., Account. Pur. Dept., Southern, Ambassador.
McGill, Wm. S., Princess.
McKirgan, C. H., Spec. Detective, P. R. R. & Atl. City, Atl. City.
Mallam, T. L., Fore. Boiler Maker, Penn.
Mars, John O., Air Brake Fore., H. P., Princess.
Martin, H. G., Gang Fore., Penn., Iroquois.
Maurer, Harry W., Car Dept., W. & C. Div., P. & R., Melbourne Cottage.
Mechline, Ernest F., Western R. R. Assoc., Brighton.
Meredith, Wm. F., Div. Storekeeper, P. & R.
Meyer, F. C., Insp., Penn., Lewellyn.
Miller, Edwin G., Asst. Fore., P. & R., Stanley.
Miller, E. N., Gang Fore., Penn., Martinique.
Millington, Wilbur Bart, Cornwall, Traymore.
Mitchell, S. M., Asst. Fore., Penn., Biscayne.
Moffitt, G. C., Fore., Penn., Wilson.
Moore, I. D., Elec. Engr., M. P., Traymore.
Moorehouse, W. W., Asst. Chf. Clk., S. M. P., B. & O., Shelburne.
Morningstar, E. E., Draughtsman, B. & O., Louvan.
Mulligan, T. C., Chf. Clk. Gen. Mgr., C. R. R. of N. J.
Nuelheim, L. C., Chf. Head Lt. Dept., B. & O., Craig Hall.
O'Connor, E. F., Air Brake Fore., Southern, Breakers.
Oswald, Geo., Fore., L. I.
Overdorff, C. A., G. F., Penn., Princess.
Packard, Harold, Haddon Hall.
Palma, Enrique, Insp. Eng., Chilean State Rys., Ambassador.
Parker, F. W., Fore., Penn., Louvan.
Parkinson, M. B., Asst. For., Penn.
Parry, P. B., Traymore.
Patterson, William J., Asst. Ch. Bur. of Safety, I. C. C., Breakers.
Penn, William, For., Penn., Gage.
Pfahler, Jr. F. P., B. & O., Princess.
Pfhahler, Robert D., Princess.
Pie, E. E., Chf. Drafts., Penn.
Porter, E. M., Air Brake Mach., B. & O., Norwood.
Pratt, H. A., Acct. Supply Dept., N. & W., Traymore.
Price, Chas. M., C. C. Bur. of Stat., P. & R.
Price, C. W., Elec. Car Lgt. Supvr., B. & O., Alamac.
Quinn, James F., Clk., Penn.
Reagan, H. V., Air Brake Mach., B. & O., Norwood.
Redline, R. H., Draftsman, Penn., Continental.
Redmond, Aiden J., Boiler For., L. I., Clarington.
Reeve, P. C., For., Penn.
Riday, W. C., P. A., N. & Port. Belt Ry., Santa Regis.
Riday, W. C., Secy. & Auditor, N. & P. B. L., Santa Rita.
Riselman, John, Asst. For., Penn.
Ritter, Gilbert P., Western R. R. Assoc., Chalfonte.
Roberts, Capt. T. G., U. S. N.
Robertson, H. M., Chalfonte.
Robey, A. A., Southern, Shelburne.
Robinson, J. P., Sig. Insp., S. P., Brighton.
Robinson, Jr., W. L., B. & O., Runnymede.
Rorick, Fred, Asst. Blacksmith Fore., D. L. & W.
Roth, Chas. R. E., Eng. House Fore., P. & R.
Rothenberger, Howard E., Fore., Penn., Wilson.
Santa Maria, Domingo, Insp. Eng., Chilean State Rys., Ambassador.
Sawyer, E. M., Mgr. Ry Term. Div., I. C. S., Haddon Hall.
Schaefer, Louis, Boilermaker, P. R.
Scheffer, C. A., Asst. For., Penn.
Schindler, J. M., Foreman, Penn.
Schmehl, Geo. L., For., P. & R., Terminal.
Schneider, Carlos, Asst. S. M. P. Chilean State Rys., Ambassador.
Schumter, L. P., Chf. F. C.—Dfts. S. P., Rothwell.
Scott, Robert F., F. Blacks., P. & R., New England.
Seward, Henry, P. S. C., Haddon Hall.
Shaffner, Charles, Eng. House For., Penn.
Shank, Edward L., Asst. Fore. M. P. & R. E. Dept., P. & R., Somerset.
Shepherd, J., Fore. Erect. Dept., C. R. R. of N. J., Sterling.
Sheridan, T. F., C. C. to S. M., P. & L. E., Glaslyn-Chatham.
Shiraishi M., Suzuki & Co., Traymore.
Sikora, Charles A., Clerk, Penn.
Simpson, G. R., Prim. Exami. of Div. 34, U. S. Pat. Off., Traymore.
Slenker, C. A., Gen. Black. For., Long Island., Riddle.
Smeltz, J. H., Head Light Supvr., B. & O., Craig Hall.
Smith, A. O., Sig. Eng., Phila. Rapid Tran. Co.
Smith, E. W., Eng. of Transp., Penn., Chalfonte.
Smith, Frank A., For., B. & M., Colonial.
Smith, Geo. W., For. Eng. House, P. & R.
Smith, John E., Mach., L. V., Monticellor.
Snyder, Claude R., Draft., P. & R., Gage.
Sorp, C. F., Tool Insp., B. & O., Osborne.
Souders, Eugene H., Motive Power Dept., P. & R., New Roberts.
Spence, C H., Draftsman, B. & O., Craig Hall.
Stabler, L., Car Checker, B. & O., New England.
Stair, Jacob, Jr., Gen. Elect., Penn., Dennis.
Staples, O. L., F. M. E., Phila. Term. Div. Penn., Islesworth.
Stephens, R. M., Penn., 1301 Pacific Ave.
Stewart, L. M., Genl. Boiler Insp., A. C. L., Dennis.
Stier, J. E., Leading Draughtsman, B. & O., Louvan.
Stitzer, M. A., England.
Stout, William, Elect., P. & R.
Streeper, A. T., Asst. Eng., Nickel Plate, Alamac.
Stumpf, Dr., Prof. Tech. Highschool, Berlin, Germany, St. James.
Thompson, Wm., Mach., L. V., Monticello.
Thorn, Alfred P. Jr., Gen. Sol., Asso. of Ry., Chalfonte.
Thwaites, D. G., Draftsman, Penn., Pennhurst.
Train, A. H., Spec. Eng., N. Y. C., Shelburne.
Trappe, W. C., For., Penn.
Triggs, C. M., For., Penn., New England.
Troutman, G. A., For., H. & B. T. Mt., Continental.
Trucco, Manuel., Director General, Chilean State Railways, Ambassador.
Truitt, J. L., M. P. Insp., Penn.
Tydeman, A. F., Chief Insp., H. T. L., Traymore.
Waas, G. J., Secy. to Genl. Mgr., S. A. L.
Walsh, Charles E., Asst. P. A., Penn., Traymore.
Walther, G. C., For., Penn., Belmont.
Warren, H. E., Elec. Eng., Lackawanna, Marlborough.
Weber, Walter W., Asst. For., P. & R., Stanley.
Weidner, C. A., Apprentice, P. & R.
Weightman, I. J., Chf. Clk. M. P., P. & R.
Wenzel, C. F., For., Penn.
White, W. J., Fore. Mach. Tool Dept., U. S. Naval Air Craft Dept.
Whiteman, R. C., Insp., B. & O., Schlitz.
Wightman, F. A., Asst. Road Fore. Engrs., Penn. Chalfonte.
Williamson, G., B., Trav. Car Rep., B. & O., Bouvier
Wilmer, John, Clk. Pur. Dept., B. & O., Strand.
Wilson, Robert, Air Brake Ins., P. & R., Alton.
Wood, H. I., Chief Draftsman, N. Y. C., Pennhurst.
Wood, J. S., Vice Pres. Mex. Pet Corp., Strand.
Wooster, M. A., M. Insp., B. & O., Princess.
Yarnall, George C., Fore., C. R. R. of N. J., Lyric.
Yoder, Jas. N., Car For., P. & R.
Yohe, C. M., P. A., P & L. E., Marlborough.
Young, Geo. L., For. of B. Dept., P. & R., New England.
Zimmerman, Harry R., Asst. Fore. M. P. D., P. & R., Stanley.
Zimmerman, H. C., Ord. Eng., U. S. Gov., Colonial.

Conventionalities

A party of prominent men arrived in Atlantic City on Saturday evening as the guests of John H. Hubbard of Hubbard & Co., Pittsburgh, having accompanied Mr. Hubbard from New York on his yacht, the Alicia. The Alicia was expected at about 5 p.m. Saturday, but high winds and a rough sea delayed her for some hours. Mr. Hubbard's guests included A. H. Smith, president of the New York Central; Charles M. Schwab, and W. W. Atterbury, vice-president of the Pennsylvania Railroad.

A. D. Prendergast, formerly with The Texas Company, is attending the convention this year in his new capacity as general mechanical inspector of the Central of Georgia.

A. R. Ayers, superintendent of motive power of the Nickel Plate, who arrived at the convention on Friday, is receiving congratulations on the birth of a daughter, Helen, now just two weeks old.

George R. Carr of the Dearborn Chemical Company found it necessary to hurry home to Chicago on the Broadway Limited yesterday because of the illness of his wife, who is in the Presbyterian Hospital.

B. T. Jellison, for many years at the head of the department of purchases and stores of the Chesapeake & Ohio, has just been made southeastern representative of the Pittsburgh Steel Products Company and is attending the convention this year in that capacity.

Among the Japanese guests at the convention this year is Kumeo Baba, inspector of electric locomotives for the Imperial Railways of Japan. He is making a two-day visit at Atlantic City and after a tour of inspection of the railways in the United States will proceed to England and the Continent for further investigation.

President E. J. Pearson and General Manager C. L. Bardo, of the New Haven, motored down from New Haven, arriving at Atlantic City early Saturday morning. They put in a busy day on the pier and left for home on Saturday afternoon.

S. Inglis Leslie, who for many years has been an active member of the Enrollment Committee, and J. J. Cizek, who is on the Entertainment Committee, have been called to New York to attend the funeral of Mr. Leslie's cousin, J. H. Legate, secretary of the Leslie Company.

David J. Champion, president of the Champion Rivet Company, of Cleveland, is not attending the conventions this year because of the death of his wife, who passed away on June 8. His many friends at the convention are deep in their sympathy for him.

J. G. Gunning, secretary-treasurer, Electric Arc Cutting & Welding Company, is attending the convention in charge of the exhibit of that company. It is his first convention here with this company; he was formerly with the Splitdorf Company as assistant to the general manager.

Dave Redding, assistant superintendent of motive power, Pittsburgh & Lake Erie, accompanied by his shop superintendent, Karl Berg, and Mechanical Engineer Harry Courtney arrived on Sunday morning. Dave is looking fine, although, as many of his friends know, he was seriously ill during the winter and suffered also from a fractured leg. He has fully recovered and is ready to get back into the game with his usual vim.

F. E. Russell, assistant mechanical engineer, Southern Pacific is here with his wife and daughter from San Francisco, coming all the way across the continent to attend the conventions. C. E. Peck, superintendent of motive power of the Oregon Railway & Navigation Company, is another far western member of the association who is attending the conventions.

Many of the Pacific coast members of the association are prevented from attending the conventions this year because of the heavy passenger traffic occasioned by the Shriners' convention. The Southern Pacific is to run 36 special trains between San Francisco and Portland to accommodate the jolly Masons.

In the conventionality item concerning J. H Cooper published in Saturday's Daily, we neglected to state that Mr. Cooper is the Mexican representative of the Barco Manufacturing Company. During the past year he has installed the Barco connections on most of the new locomitives purchased by the National Railways of Mexico and all of the new locomotives purchased by other Mexican railroads.

Taizo Hattori, a mechanical engineer of the Japanese Government Railways, arrived in New York a few days ago and expects to make his headquarters there for the next two years as a resident representative of the Government Railways of Japan. Mr. Hattori spent two days looking over the exhibits. He expressed great surprise at their extent and elaborateness and made many friends with the people with whom he will have to deal during his stay in this country.

G. Marks, assistant to the general manager of the New York, New Haven & Hartford at New Haven, Conn., who has been so successful in using electric trucks in handling freight at terminals, is attending the conventions this year. During the past year Mr. Marks presented an extremely interesting and instructive paper on this subject before the New England Railroad Club at Boston.

The "New Haven Twins" are here this year—the inseparable Joneses of the New York, New Haven & Hartford, V. L. and W. J., both in the executive department as assistants to W. L. Bean, mechanical assistant. The New Haven Twins, although of the same name are not of direct relationship. They began their Siamesian relations when they were both students of Columbia University. They are strong boosters for 100 per cent locomotive efficiency.

Guy M. Bean, the Pacific Coast representative of the American Arch Company brings reports of booming business in the Far West. From present indications the green fruit business will be very heavy; a bumper crop is promised. Conditions in general in California are booming and the depression in business was not felt nearly as much as in the East. The railways particularly are in good physical condition and are enjoying a good wholesome traffic.

Frank Hedley, president of the Interborough Rapid Transit Company, has at last come to the locomotive supply field seeking aid to relieve him of his transit problems in New York City. When told of a new order for 100 boosters to be applied to existing locomotives on the New York Central he promptly began negotiations for the entire booster output of the Franklin Railway Supply Company for an indefinite period. He wants to use this

large supply to counteract the effect of the overwhelming number of "Knockers" who ride on his road.

Steinmetz—Electrical Wizard. Yes, that's right, but watch your step. C. P. (Charles Proteus) Steinmetz is chief engineer of the General Electric Company, and W. R. Steinmetz is manager of the heavy traction division of the Westinghouse Electric & Manufacturing Company. Those who wish to avoid any possibility of confusion in the future may have the opportunity of meeting W. R. S. at booth 27.

Last night at the Marlborough a uniformed lad came down "peacock alley" crying "Hershey's, Hershey's," and people began digging for a dime to buy some milk chocolate. But that wasn't the game. It was only a page calling for the genial Q. W. Hershey, of the Westinghouse Electric & Manufacturing Company. Mr. Hershey is the man who started in the Westinghouse apprenticeship course and in 15 months was on the road as an erecting engineer. That was some speed. He is now in the Pittsburgh office handling the relations of the Westinghouse Company with the steam railroads of that district.

If one wants to find out quickly who's here any member of the Enrollment Committee can tell you, almost in a jiffy. All this is due to the installation of a new filing system in the committee's office on the pier. Chairman Franklin H. Smith and his committee, whose names have previously appeared in the *Daily*, have moved quickly and efficiently during the past week and are entitled to credit marks of appreciation. Mr Smith has now served on the Enrollment Committee for nine conventions. He has also served with credit the interests of his company, the Gold Car Heating & Lighting Company, for 13 years. Franklin is also proud of the record made by his nephew, Major E. H. Armstrong, who has been called America's foremost radio expert. This young wizard has so perfected radio apparatus that largely through his inventive genius radio broadcasting and wireless telephone communication have been greatly perfected, aerials abolished and spark interference largely eliminated.

A hero among the younger generation and a man of "refined steel" among the older generation is Charles H. Hogan, the famous driver of engine 999. He it was who made the world's record for speed of 112½ miles per hour with the 999 at the time of the Chicago World's Fair. Mr. Hogan was formerly district superintendent of motive power of the New York Central at Albany and when the time for retirement came an exception was made in his particular case, for he is being retained in special work under the direction of Howard L. Ingersoll, assistant to the president. This is considered a great honor on the New York Central, for the only other officer of the road accorded similar recognition was Chauncey M. Depew, who, in spite of his 89 years, is still retained as chairman of the board. Mr. Hogan may be readily identified on the pier by his badge, No. 999, which is granted him year after year in recognition of his famous performance many years ago.

Dr. J. Stumpf, of Berlin, Germany, inventor of the Una-flow steam engine which is handled in this country by the Stumpf Una-flow Steam Engine Company, Inc., is attending the conventions. He is accompanied here by Charles C. Trump, vice-president of this company. Dr. Stumpf is a professor in the Technical High School of Charlottenburg. He said yesterday that the physical condition and service of the German state railways are rapidly being restored to normal. On the other hand, their operating expenses continue to be excessive, and they are incurring large deficits. Dr. Stumpf attributes this largely to the political influence exerted by the labor unions which are very powerful. They resist efforts to make needed reductions in the number of employees and other increases in afficiency and the government is afraid to force the issue. Hence losses continue to pile up, and, as under government control in the United States, the tax payers have to pay the bill. Before the war employees of the Prussian state railways were not allowed to belong to labor unions and were subject to a military discipline, and Dr. Stumpf attributes mainly to these conditions the much greater economy and efficiency of operation then obtained.

There has been a lot of talk this year among baseball fans about a revival of the annual ball game. In the event that the "talk" takes definite form, we have been served with notice that the old warhorse "Midge" (Captain Stanley W. Midgley) is still on the job and is prepared with a "full crew" to line up and "try" to trim the East as trimmed on a few occasions in years past. Midgley, by the way, started his unbroken attendance at the conventions just twenty years ago and, if our records are correct, lined up in the western team with Joe Taylor, son of the former secretary of the M. C. B. and M. M. Associations, in a battle royal with the eastern team. Midgley seems to be in good form this year, and the fact that he has become eligible to the membership of the Colorado Mountain Climbers Club as a result of an exceptional record established last year in climbing Long's Peak, 14,250 ft., in one day—a distance of 15 miles—would bear out this statement. Midgely is here with his partner in business, Barrowdale, and is prepared to make good in more ways than one.

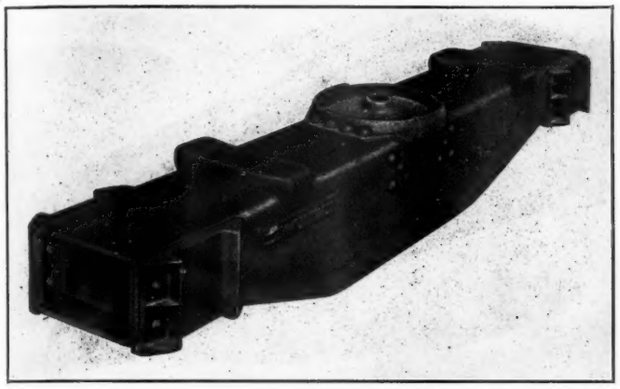
Mell Hatch, mechanical engineer of the Missouri, Kansas & Texas, comes to the convention this year with the reputation of a "star gazer," whatever that may mean, He is planning to hitch his wagon to a star and is making a very careful study of the wonders of the universe in order to learn which star to choose. This "star gazing", it must be understood, is very incidental to what is going on in the brain of the new mechanical engineer of the M. K. & T. His railway is traveling a rapid road to prosperity. With constantly increasing net revenues it is finding it possible to enlarge, develop and improve its facilities. Mr. Hatch is particularly interested at the present time in the purchase of machine tools for a 22-stall roundhouse which is to be built at Ray, Texas, just outside of Dennison, in connection with the hump yard being built at that point. This roundhouse will handle five Class 3 repairs per month and will be provided with a small, first-class power house. Plans have also been completed and the expenditure authorized for the construction of a 16-pit locomotive repair shop, which will be designed on the transverse principle and so constructed that it can be later enlarged to handle 40 locomotives per month. This shop will require practically all new tools and will be up to date in every respect. Mr. Hatch also reports the careful investigation of locomotive feedwater heating. The road will make comparative tests between the Elesco, the Worthington and the exhaust steam injector. Two each of the Elesco and Worthington heaters have been ordered for this purpose and one exhaust steam injector. In commenting upon the long passenger engine runs made by the Katy engines, Mr. Hatch points out the fact that they are all oil burners and that they run for 23 hours at a stretch covering distances of 650 to 700 miles. The Katy is one of those roads which has had a most healthy recovery from receivership difficulties and it is anticipated that its reorganization will be completed and put into operation within a few weeks.

New Devices Among the Exhibits

Wrought Steel Bolster

THE BOOTH of the T. H. Symington Company, New York, there is shown a very interesting wrought steel truck bolster flanged or forged in one piece from steel plate and following in its design and manufacture the principles so successfully used in the development of the wrought steel truck side frame which was described in an earlier issue of the *Daily*.

The bolster plate is first blanked out, then flanged and



Truck Bolster Pressed from Steel Plate

finally folded into a complete box section, the contacting flanges being welded together along lines not subject to service stress. Adequate reinforcement is provided under the center plate and over the truck springs and the bolster guides are of the usual standard design. The assembled bolster, being a complete box-section girder, has none of the defects inherent in all built up or riveted designs.

The bolster meets all the present A. R. A. requirements for interchangeable dimensions and strength and its designers consider it a step in advance beyond any bolster of its general type which has yet been developed.

Plug Valves for Tank Cars

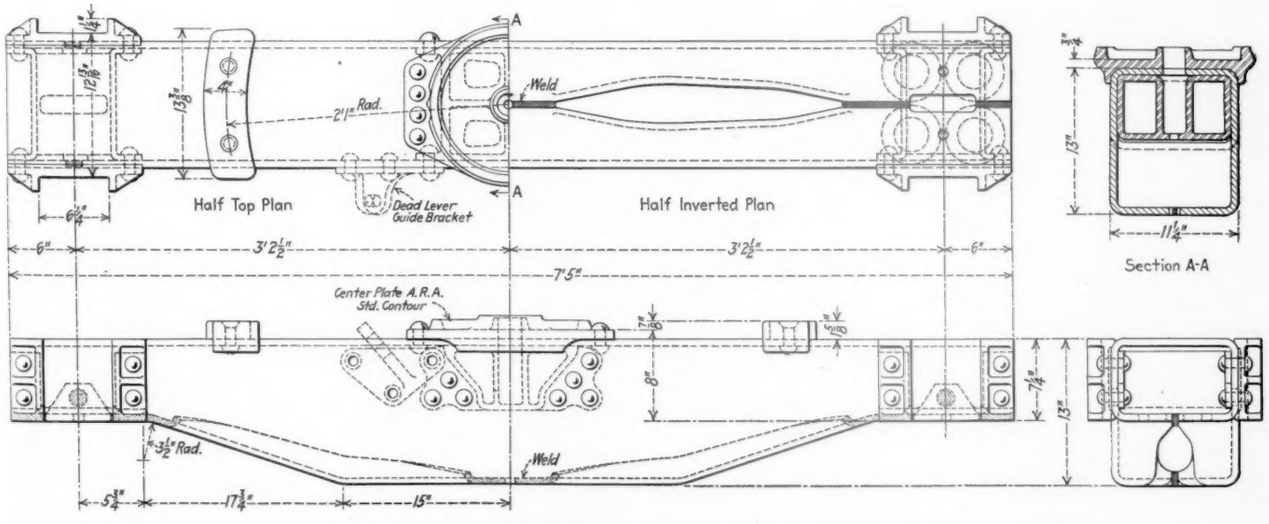
AN ADAPTATION of the Merco-Nordstrom type of plug valve for use as a discharge valve for tank cars has been made recently by The Merrill Company, Chicago. Preliminary results obtained from a few valves that have been applied to tank cars are said to be quite satisfactory.

The peculiar feature of this valve, which has been used in other classes of service for a number of years, is the method of applying a lubricant to prevent sticking or leaking. The grease used to lubricate the valve is placed in a cavity in the center of the valve stem, the upper end of the cavity being closed by a screw. From this cavity passages extend to the outer surface of the plug near the top, thence along grooves to the chamber below the plug. Applying pressure to the lubricating screw forces the grease to lift the plug from its seat. The plug is thus free to turn and the lubricant is distributed from the grooves and grease chamber below the plug. An asbestos packing lined with anti-friction metal is inserted between the top of the plug and the upper cap. The asbestos has enough elasticity to allow the plug to be lifted sufficiently for the distribution of the lubricant.

Double Sectional Arch

A SMALL MODEL firebox equipped with a double security arch is shown in the exhibit of the American Arch Company, New York. As will be noted from the illustration, this device consists of a double arch supported on two sets of arch tubes, the brick being arranged in such a way as to increase the effectiveness of gas mixing and distribution of the flame throughout the firebox. The use of an increased number of arch tubes materially increases the boiler circulation and evaporation.

To quote from a paper on the "Effect of Circulation on Locomotive Boiler Efficiency," read at the recent fuel

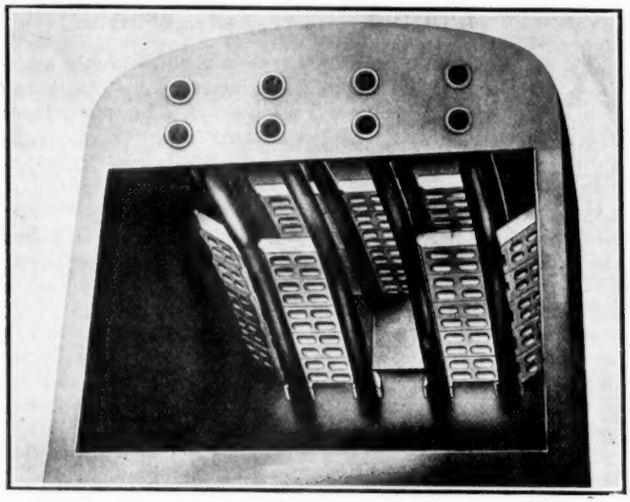


Drawing Showing Details of Construction of the Bolster

convention by F. G. Lister, mechanical engineer, El Paso & Southwestern: "The velocity at which the water and steam pass through the arch tube, approximate V=8Vh, in which V=velocity in feet per second and h=head in feet, or the difference between the vertical height of the upper and lower ends of the tube, the velocity of flow through the tube increasing until the water all becomes steam.

"The greatest quantity of water circulating through the tube, however, is when the column is half water and half steam. From the above rule the circulation through the tubes may be readily determined, provided they permit of the free flow of water so that the bends do not retard the flow. If we consider a locomotive boiler having four arch tubes, each 3 in. outside diameter No. 8 B. W. G., and 5.94 sq. in. cross sectional area, or a total area of 0.165 sq. ft. in the four tubes, and a head of four feet, we should have 8V4=16 ft. per sec., multiplied by 0.165 sq. ft. =2.64 cu. ft. of mingled steam and water discharged from the arch tubes per second, one-half of which (0.132 cu. ft.) would be steam. At 200-lb. gage pressure, the steam would weigh 0.47 lb. per cu. ft. Then 1,632 lb. of steam would be discharged from the tubes per hour. Water at the temperature of steam at 200 lb. pressure weighs 54 lb. per cu. ft. and the steam 0.47 lb., so that the steam forms but $\frac{1}{115}$ part of the mixture by weight; therefore, each particle of water will make 115 circuits before being evaporated when working at this capacity and circulating the maximum weight of water through the tubes.

"Four thousand, seven hundred and fifty-two cu. ft. of water will pass through the four arch tubes per hour, and as the average locomotive boiler of today contains about



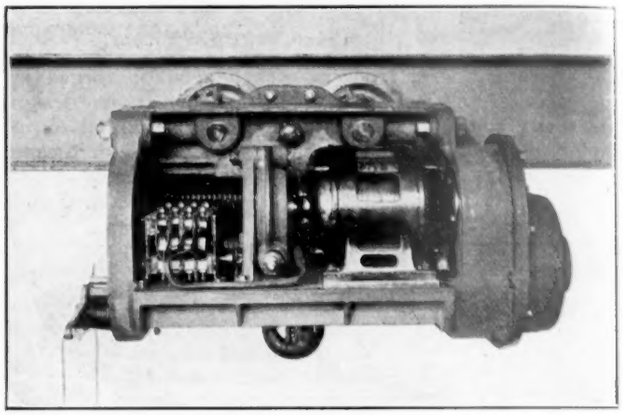
Model of Firebox Cut Away Showing Arrangement of Double Arch

600 cu. ft., the water would all pass through the arch tubes every 7½ min."

Increasing the number of tubes reduces the time required to circulate all the water. The use of eight arch tubes will reduce the time required to 3¼ min. These calculations clearly indicate the value of the arch tubes in stimulating circulation of the water in the boiler. The use of a double arch, such as shown, also insures a better mixing of the combustible gases and oxygen, increases the combustion efficiency, reduces smoke and spreads and distributes the flame in such a manner as to completely fill the firebox—thereby increasing the heat absorption of the firebox heating surfaces.

Electric Hoist with Short Headroom

THE PRINCIPAL FEATURE of a new hoist developed by the Standard Electric Crane & Hoist Company, Philadelphia, Pa., is the short headroom required for its operation. The three-ton hoist exhibited can be operated with a headroom as low as 14 in., this dimension



Standard Electric Hoist With Cover Plate Removed

being considerably less than needed for the usual electric or chain hoist.

The new standard hoist is of simple and rugged design, being entirely enclosed as a protection against dust and weather. A straight spur gear drive is used throughout. All gears and main bearings operate in an oil bath, other bearings being lubricated by the Alemite high pressure system. The arrangement of the hoisting motor, holding brake and controller are clearly shown in the illustration. The hoist is equipped throughout with high-duty Hyatt bearings and an efficiency of over 80 per cent is said to be obtained with a standard stock hoist. All track wheel pins are made of manganese axle steel.

Accessibility for inspection and repairs is a valuable feature of the standard hoist. It is possible to remove all working parts without disassembling the main frame or body of the machine. The hoist has been thoroughly tested under overload and regular shop conditions.

Sediment Measure for Storage Batteries

A MEANS FOR DETERMINING the exact amount of sediment in a car lighting battery jar without the necessity of removing the groups, has been devised and is being exhibited by the Electric Storage Battery Company, Philadelphia, Pa.

The device is a long thin strip of wood veneer. It is inserted through the vent of the front cell to the bottom of the jar through one of the spaces in the wood separator. After being allowed to remain in that position for a few moments, it is withdrawn and the discoloration, caused by the sediment, is noted.

This device will give the car lighting man in the yard a method of determining the time when the battery requires cleaning. Without any accurate and convenient method of determining the condition of sediment in the jar, there is undoubtedly a tendency to dismantle and wash batteries oftener than is necessary. The company announces that a supply of these probes is available with its compliments to any railroad which may request them.

Railroad Shop Equipment and Machine Tools

Descriptions of Most of the New Shop Equipment and Machinery on Exhibition Appeared in the June "Railway Mechanical Engineer"

THE PRESENT IS an age of machinery and labor saving equipment, and railroads should take advantage to the fullest possible extent of this equipment to reduce to a minimum the cost of maintaining and operating cars and locomotives. If antiquated, inefficient shop machinery is still used, whether avoidably or unavoidably, with ensuing high labor costs and low production, it certainly will not be the fault of the manufacturers, who have developed some really remarkable machines during the past year in spite of adverse business conditions which would have discouraged any but the most resolute.

A glimpse of the exhibit in Machinery Hall can hardly fail to impress railroad men with the efficiency and value of the machines shown and the impression will be in exact proportion to the time spent in studying them. Most of the new equipment brought out during the past year, and now being exhibited, was described in the June Railway *Mechanical Engineer,* copies of which are available. Inasmuch as subscribers to this paper receive copies of the *Daily Railway Age,* detailed illustrated descriptions of the new equipment cannot consistently be repeated in this issue but the equipment is of special interest and value to railway men and attention is, therefore, called to it by means of the following brief comments:

Colburn Vertical Boring and Turning Mill

An improved Colburn 42 in. vertical boring and turning mill is being exhibited at the booth of the Dale Machinerey Company, New York. This machine is one of a line of boring mills made by the Colburn Machine Tool Company, Cleveland, Ohio, incorporating many new features of design; it was described in detail on page 344 of the June *Railway Mechanical Engineer.* The Colburn boring mills are made in sizes from 36 to 84-in. swing, inclusive, the entire design being developed with the idea of securing high power and production together with easy and convenient control by the operator. The machines can be provided with two swivel heads or one turret head if preferred.

The drive consists of a primary and secondary speed unit, the latter being located within the bed of the machine and providing three speed changes. The primary unit provides four changes, thus affording a total of 12 speed variations ranging from 2¼ to 70 r. p. m. in geometrical progression. The heads are entirely independent both as to the direction and amount of feed. The turret is tilted to an angle of 8 deg., affording ample clearance for large tools when swung over the slide. Complete control for each head and ram, for both feed and rapid traverse, is obtained by a single lever, the lever being always thrown in the direction of the desired movement.

The rail-lifting device is of special interest, and consists of friction clutches and gears contained in one contact unit and controlled by a single lever. Another unusual feature of design is the spring counterweight for the ram which eliminates the use of weight, cables, sheaves, wheels, etc. Power rapid traverse permits the heads and rams to be moved in all directions by power at the rate of approximately 12 ft. per min. Special attention has been given to the proper lubrication of this machine, also to the provision of safety guards for both operator and mechanism. The machine is well adapted for the many boring and turning operations performed in railroad shops.

Improved American Engine Lathe

Two features of special importance in the 24-in engine lathe exhibited by the American Tool Works Company, Cincinnati, Ohio, are the new geared head and the motor drive arrangement; details of these improvements are described on page 347 of the June *Railway Mechanical Engineer.*

The new head provides 12 speeds instead of 8 as formerly. The spindle is under instant control through either of two levers, one located on the right side of the apron and the other on the left side. A powerful external hand brake enables the spindle to be instantly stopped or allowed to drift when the driving friction is released. Another feature of the new head is the arrangement for removing one gear unit and operating lever so that four speeds are available instead of 12 when a two-to-one or three-to-one variable speed motor is being used. An automatic oiling system of special merit has also been devised for this lathe.

The new motor drive arrangement consists of three steel herringbone gears with a patented flexible coupling enabling the motor armature to float without crowding the gear. Noiseless, smooth running operation and long life are said to be secured by this construction.

Two New Hendey Machines

The Hendey Machine Company, Torrington, Conn., is exhibiting two machines described on pages 357 and 354 of the June *Railway Mechanical Engineer,* embodying many improved features of design. These machines include a 24-in. crank shaper and a 14-in. toolroom lathe. The shaper is self-contained and compact, being designed for durability, simplicity and convenience of operation. An extended table is provided, enabling work with a considerable overhang to be rapidly set up. The operating lever for starting and stopping the ram is conveniently located and the statement is made that the ram can be stopped at any point in the stroke within ½ in. under the heaviest of cuts.

A point of special interest about the 14-in. toolroom lathe is the location of the driving motor under the oil-pan. This arrangement is very compact, since no additional headroom or floor space is required for the driving motor. The motor is easily accessible and does not obstruct the light or vision. Reduction gears are placed between the motor and the feed box, which is in the left pedestal of the lathe. The usual Hendey construction of taper spindle and bearings is provided, with an additional distinctive feature in the method of taking up end play on the spindle. Other points of interest are the construction of the single pulley and pinion running on a sleeve, operation of the intermediate sliding feed gear by eccentric levers and 18 speed changes, nine being direct through a belt to the spindle and nine through the customary back gears. Motor control is by means of push buttons.

Niles-Bement-Pond Turret Tool Post

Speed of changing cutting tools in an important factor in wheel lathe operation and the Niles-Bement-Pond Company, New York, has for a long time made its wheel lathes with tool posts equipped to clamp the tools pneumatically.

Some railroad men prefer the turret type of tool post, however, and for the benefit of those halding this preference, the Niles-Bement-Pond Company has developed a special turret tool post which is described on page 368 of the June *Railway Mechanical Engineer*.

An unusual feature of this tool post is the arrangement for two positions, the turret turning in a vertical plane, The roughing tool is held in the solid part of the post enabling extremely heavy roughing cuts to be taken. The turret is a massive piece of forged hardened die steel, provision being made for a wide taper key to take the thrust on the turret after adjustment. This relieves the spindle of the turret from undue torsional or shaving strains The levers and hand wheels for operating the turret are conveniently located and the turret can be indexed in a fraction of a minute. The taper key and turret are carefully protected from dust and chips by a hardened chip guard.

Clark Gasoline Power-Lift Truck

The Clark Tructractor Company, Buchanan, Mich., is exhibiting a gasoline power-lift truck with power-elevating platform, which was described in detail on page 351 of the June *Railway Mechanical Engineer*. The special advantages claimed for this truck are low initial cost, ease of maintenance, flexibility and continuous 24 hr. service when necessary.

The lifting mechanism is operated by hydraulic pressure, the power for both locomotion and elevating the load being derived from the 15-hp. four-cylinder gasoline engine. A three-point suspension is used, the steering wheel forks being supported in a steel casting pivoted at the center of the frame. The driving and elevating controls, mounted on the rear of the engine compartment, are operated by the driver who drives standing. Arrangement is made so that the truck lift stops automatically if the operator steps off while the machine is running. This truck is designed to climb a 10 per cent grade with a 4,000 lb. load. It has two speeds in each direction. The total weight is 2,500 lbs.

Thor Pneumatic Rivet Buster

A pneumatic tool known as the Thor No. 90-S rivet buster, for cutting off and backing out rivets in all sizes is being exhibted by the Independent Pneumatic Tool Company, Chicago. This substantial tool is designed to be operated by one man instead of three and is therefore adaptable for use in close quarters where it will be impossible for three men to work at the same time. The tool delivers its blows with greater speed than usual with the result that rivet heads are sheared off smoothly on the surface of the sheet without disfiguring or spoiling the material. The blows, being rapid, are not so severe and do not buckle the plate at the rivet holes. Both chisels and backing out punches are provided with individual safety retainers and can be quickly changed when desired. This tool is described on page 347 of the June *Railway Mechanical Engineer*.

Laughlin-Barney Tube Shearing Machine

A machine of unique design has been developed by the Laughlin-Barney Machinery Company, Pittsburgh, Pa., for shearing pipes and tubes rapidly without the loss of material and with a square cut free of fins, the pipe or tube not being revolved. The novelty of this machine consists in the shearing principle employed. The cutting mechanism includes an internal arbor and two shear knives made in the form of two hardened steel rings which are placed close together and through which the pipe or tube passes. On account of one shear knife being concentric and the other carried in a head which follows an eccentric path the pipe or tube is sheared off in one revolution of the machine. The action of shearing is said to have little wearing effect on the cutting edges of the knives and the machine is always under the accurate control of the operator through a positive clutch operated by a foot treadle. This machine is described in greater detail on page 365 of the June *Railway Mechanical Engineer*.

Gray Maximum Service Planer

Important improvements in the planer design are incorporated in the maximum service planer, exhibited by the G. A. Gray Company, Cincinnati, Ohio, and described in detail on page 777 of the December, 1921, *Railway Mechanical Engineer*. The new planer has many features of interest and value, the fundamental thought underlying the entire design being the necessity for reducing the cost of planer work by combining high productive capacity with maximum ease of operation.

The best way to appreciate the possibilities of this machine is by a personal inspection. Go and see it in operation. Among the features of special interest may be mentioned the rail-setter stirrup for conveniently setting the rail; the rail-lock for applying massive steel clamps which lock the rail to the inside edge of each housing; the single-shift, rapid-power traverse levers, controlling the rapid movement of both side and rail heads; the patented cantslip feed which is positive instead of being driven by band frictions and enables any feed from .001 in. to 1 in. to be instantly obtainable. The operator has full control of the planer without walking around it or using wrenches of any kind.

Involute helical gearing is used to produce a drive of unusual smoothness, durability and power. Since planer work is usually placed close to the operator's side of the machine the rack has been widened toward that side of the table so that the driving force is applied in direct line with the cutting tool. In design and construction the attempt has been made to produce a powerful, rigid planer which can handle the heaviest work and be so easily controlled that even an inexperienced operator can secure large production.

Universal Horizontal Boring Machine

A new boring machine of the horizontal type, known as the Original Tri-way universal machine, is being exhibited by the Universal Boring Machine Company, Hudson, Mass.; a detailed description appeared on page 44 of the January *Railway Mechanical Engineer*. The name of this machine is suggested by the fact that it has a three-way bed, reducing the overhang of the table to a minimum. The machine is designed to bore, mill, drill, face and tap work in one set-up; the proportions and construction are such as to produce accurate work under unusually heavy cutting feeds and speeds. The arrangement of the operating levers is worthy of special attention, the design enabling every operating lever to be reached by the operator's right-hand without changing the position of his feet. The operation of speed and feed levers are identical, thus greatly reducing the possibility of mistakes. All speeds and feeds on this machine are in geometrical progression.

Lassiter-Millholland Staybolt Machine

Two staybolt machines, known as the Lassiter-Millholland staybolt machine, are being exhibited by the Dale Machinery Company, New York. These machines, described in detail on page 285 of the May *Railway Mechanical Engineer*, are intended for reducing the centers, also turning and threading both straight and taper ends of staybolts in uniform pitch and continuous lead. The Model *B* machine for cutting and threading radial, buttonhead and crown stays is worthy of special attention. This

is an entirely new machine, rigid and well proportioned, with a special feed-box, apron and lead screw designed to prevent lagging or creeping of the die head when threading. This machine is equipped to turn the taper and straight diameters simultaneously, the taper and straight surfaces also being threaded simultaneously in uniform pitch and continuous lead. The turning and threading operations are done separately but on the same machine by replacing cutters by chasers. The heads of the machine for threading are held in constant relation on the slide, which is advanced by a nut and lead screw in the apron. In the case of button-head radial stays a cross slide is provided for facing the button-heads. This machine has a capacity to turn and thread bolts from ¾ in. to 1½ in. in diameter and 14 in. to 36 in. long.

Hose Dismantling and Assembling Machine

A complete description of the hose dismantling and assembling machine exhibited by the Covington Machine Company, Covington, Va., is given on page 780 of the December, 1921, *Railway Mechanical Engineer*. This machine is self-contained, air-operated and designed for the sole purpose of dismantling and assembling air signal and steam hose. All of the operating levers, handwheels and various parts of this machine are designed for maximum convenience in handling this work. In an essembling test one operator is said to have taken new lengths of hose, put on clamps, forced the coupling and nipples into the hose, squeezed up the clamps, inserted clamp bolts and put on nuts, finishing 30 air hose ready for service in 60 min. In this particular case the time taken to assemble each hose ready for the clamp bolts averaged 30 seconds and the balance of the time, or 1½ minutes for each hose, was required for squeezing up the clamps, putting in the bolts and running up the nuts. The dismantling operation can be speeded up where large quantities of hose are to be handled by having one operator on the shear end of the machine cutting clamp bolts while the other is stripping the hose. This machine should prove of great value especially in car shops and reclamation plants where large quantities of hose are reclaimed for further service.

Williams Receding Die Head

Among the exhibits of the Williams Tool Corporation, Erie, Pa., is a receding die head for pipe threading machines, which was described on page 721 of the November, 1921, *Railway Mechanical Engineer*. This die head cuts either standard or special threads of any degree or length, regardless of the width of the chaser. The important features of this device may be outlined as follows: Any length of taper may be cut, regardless of the width of the die. By changing the dies and the small taper guide plate, any thread or taper may be cut. More dies are used than previously, giving more bearing points on the pipe and making less work for each die to do. When starting the thread the dies remove the excessive metal in heavy chips, receding as the cut progresses. This means that the greatest power is used at the start, gradually easing up as the cut is finished. On the old type of head the greatest strain on the dies was just near the finish, when the full width of the die was cutting on the pipe. This is generally the time when the dies are hottest and most likely to pick up stickers. The dies on the new Williams head are designed for long life. Being narrow, they do not heat up like the wide chasers. The operation of the head is rapid and simple, being practically identical with the adjustments on the old type of standard head. Threads can be cut on pipe up to 16-in. in diameter.

Arc Welding Set and Electric Melting Pot

A portable electric welding device which controls the feeding of the electrode wire into the arc, and which can be used in any place where welding current is available, has been developed by the General Electric Company, Schenectady, N. Y. The automatic or semi-automatic method increases the speed of welding and makes it possible for a comparatively inexperienced man to do good work consistently. A more detailed description of the device appears in the June issues of the *Railway Mechanical Engineer* (page 354) and the *Railway Electrical Engineer* (page 202).

Two electric melting pots for babbitt, solder and similar alloys or metals, which will hold as much as 1,000 lb. and will operate at temperatures up to 800 and 1100 deg. F., respectively, have also been developed by the General Electric Company. The heat is controlled automatically by thermostats. The devices are described more in detail in the June issues of the *Railway Mechanical Engineer* (page 360) and the *Railway Electrical Engineer* (page 202).

Racine Junior Power Hacksaw

AN ENTIRELY NEW addition to the line of machines made by the Racine Tool & Machine Company, Racine, Wis., has been developed in the Racine Junior power hacksaw. This machine has a normal capacity to cut 4 in. stock and its principal feature is the ability to operate at unusually high speed, using light gage blades. This insures quick cutting both on account of the increased number of strokes per minute and the small amount of metal which has to be cut away.

Another feature of the Racine Junior power hacksaw is the automatic listing device which is positive in action, raising the blade on the non-cutting stroke. The teeth do not drag back, no matter how great the pressure on the blade. The machine is designed for efficiency and economy, the use of the positive draw cut principle allowing light blades of 21 gage or heavy hand blades to be operated at high speed. The feed is by gravity thus applying an accurate pressure pre-determined for every class of material being cut. An automatic knock-out stops the saw when the cut is finished.

The saw frame guide holds itself automatically at any height which is a convenience when placing stock in the machine. Quick and easy adjustment for wear is provided, the frame sliding on V-ways giving maximum bearing surface. Provision is made so that if necessary to cut stock larger than 4 in. by 4 in., a simple adjustment will increase the capacity of the machine up to 6 in. by 6 in.

Huther Inserted Tooth Metal Saws

A NEW TYPE OF metal-cutting saw blade, known as the Huther high speed inserted tooth blade, has been developed by the Cochrane-Bly Company, Rochester, N. Y. A feature of unusual interest is the use of a laminated body consisting of two tempered plates riveted together. High speed steel tooth segments, riveted and shouldered to one of these plates, are provided with side clearance front to back, thus overcoming in a practical way the tendency of the teeth to stick in the cut due to the abrasion of small particles of metal on the sides of the teeth. Because of this construction it is maintained that excellent alignment or trackage of the teeth is obtained without internal stress due to wedging action.

The Huther high-speed saw blade is designed to cut blanks up to 6 in. in diameter, both straight and smooth, at feeds up to 2½ in. per min. Ordinarily the cuts do not

vary over .005 in. from parallel. All grades of mild machinery steel can be cut at feed from 2 in. to 2¼ in. per min. in sizes up to 6 in. in diameter with a production of 6,000 to 8,000 sectional inches per grinding of the blade. The teeth in these blades are alternately high and low, with the corners of the high tooth beveled. For the best results this blade is ground in an automatic saw-sharpening machine, also made by the Cochrane-Bly Company, a round blade being secured in which every tooth cuts its proper chip. The high beveled tooth cuts a groove in the center of the slot and breaks the chip into three parts. This assists not only in the clearance of chips from the slot, but contributions also to the more efficient lubrication of the cutting points.

Heavy Duty Crank Planer

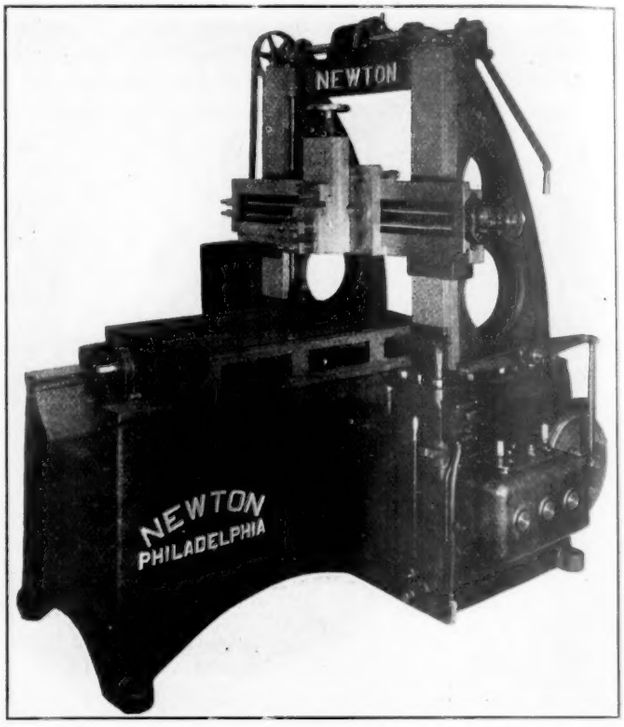
To meet the requirements for a heavy duty tool for short stroke work, the Newton Machine Tool Works, Inc., Philadelphia, Pa., has brought out a new model crank planing machine, made with one or two heads on the crossrail as may be required. The rated capacity of the machine is 32 in. wide and 32 in. high,

View Showing Motor Drive Arrangement

with a maximum stroke of 34 in. The base is a one-piece box-type casting, in which all thrusts and cutting strains are concentrated. The motor is mounted on the off-side of the machine, variations in speed being controlled by the gear box. The speeds provided are 6, 8¼, 12⅓, 17½, 23⅔ and 35½ strokes per minute.

The compactness of the drive is clearly illustrated. The main driving gear is of the helical type, transmitting power to the rocker arm and giving a relatively uniform cutting speed with the advantage of a slightly lower speed at the start of the cut. The quick return is 1¾ to 1 maximum. The table is provided with an adjusment of 20 in. which can be made while the machine is stroking. After the table is positioned the driving element is solidly clamped by the square-end shaft shown at the end of the table. Table control is through a clutch and brake, provision being made to lock the operating lever out of position so that it cannot re-engage and injure the operator. The feed motion is of the circle type, operating on the return stroke of the table. This motion is transmitted to the cross-rail through a rack and pinion, giving cross, down and angular feed. The cross-rail is raised and lowered by power.

In operation cuts on forged steel ⅜ in. deep with 1/16 in. to ⅛ in. feed are taken. The length of stroke is set from the operating side of the machine with an indicator to show the length is obtained. Providing, as it does,

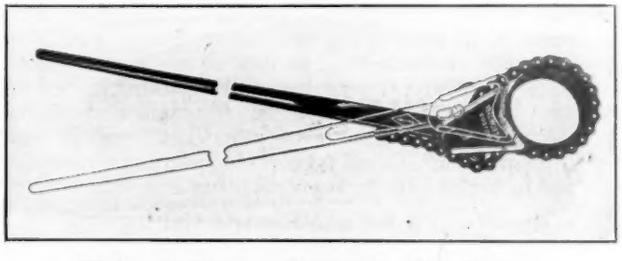


Newton Heavy-Duty Crank Planer

positive stroke with a fixed quick return and a wide range of speeds, the new Newton crank planer is an efficient tool for short stroke work, being particularly adapted to the machining of die blocks, forming dies, locomotive cross heads, shoes, wedges and many other similar parts.

Walworth-Bostong Pipe Wrench

An improved pipe wrench of the chain type, known as the Walworth-Bostong wrench, is being introduced to the railroad field by the Walworth Manufacturing Company, Boston, Mass. This wrench is designed to withstand the hardest service and contains some



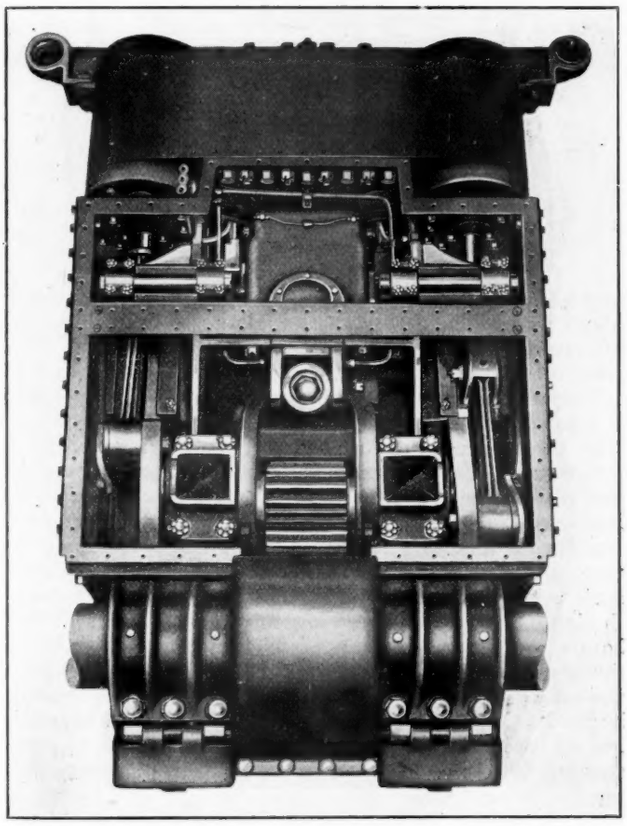
Walworth-Bostong Reversible Pipe Wrench

novel features which should make it particularly valuable for locomotive and car work. In tools of this class strength is an important characteristic. Parts subjected to stress or wear are of generous size and to avoid excess weight special steels are employed for the chain, pins and bolts. The chain is proof tested up to two-thirds the breaking strain.

There is no lost motion in this wrench, the cam action being such as to insure a rapid positive grip and release. It is reversible and may be turned to the right or left practically without any adjustment in chain or jaws.

Improved Design of Locomotive Booster

NUMEROUS CHANGES in details of design have been made in the latest type of booster exhibited at the booth of the Franklin Railway Supply Company, New York. The exhaust steam from the booster engine instead of going to the tender is now exhausted through the locomotive nozzle. The steam inlet and exhaust passages are combined in a manifold extending across the cylinder heads. All steam connections are now fitted with universal joints to care for both vertical and lateral movements instead of the slip joints formerly employed. The



Type C—1 Booster With Cover Removed

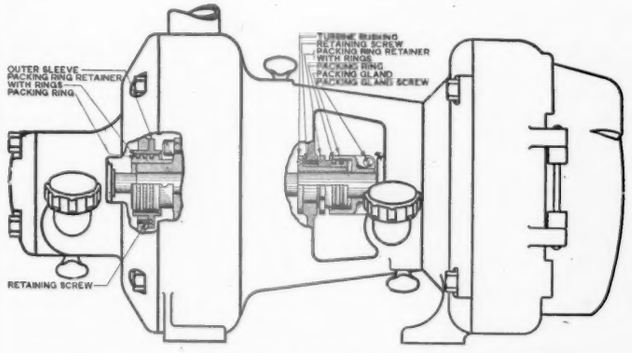
new booster engine is adapted for higher operating speeds, the maximum speed for which it is designed being 22 miles an hour.

The arrangement of the machinery parts has also undergone considerable modification. Outside valve motion has been substituted for the eccentrics and straps originally used. White metal lined bearings have been applied instead of bronze bearings, and drop forgings have replaced steel castings in several important parts. The trailer box end has been changed to a unit construction so that the gears run in a bath of oil. A unique design of idler gear and support have been applied, which prevents any stress being transmitted to the mechanism which throws the gear in and out of mesh. The bedplate has been redesigned making it oil-tight and affording splash lubrication for the bearings. The booster has a spherical seat on the trailing truck and the design is so arranged that when the trailer axle housing is disconnected the booster can be taken out without disassembling other parts.

The control mechanism has been simplified and the cylinder cocks designed for either pneumatic or manual control. The connection between the reverse lever and the booster is now arranged so that the booster can be operated while the main engine is using steam expansively. The new design of booster, when operating with 200 lb. pressure and a 45-in. trailer wheel, delivers a drawbar pull of 11,000 lb. at starting and 6,000 lb. at 22 miles an hour.

Headlight Turbine Packing

A SPRING RING packing for locomotive headlight turbines is being shown by the Pyle-National Company, Chicago. The rings are placed in glands on each side of the turbine in practically the same manner that piston rings are used in the cylinder of a gasoline engine. The fundamental difference is that the relative



Side Elevation of Headlight Set With Sections Showing Construction of Packing Glands

motion in the glands is one of rotation instead of reciprocating motion.

Three rings are used on the turbine end and two in the generator end. The three rings are stationary, while the two on the generator end rotate with the outside collar of the gland. There is a clearance of about .05 in. between the ring grooves, so that there is practically no packing friction. The seal is effected by the water of condensation that finds its way into the grooves. This type of packing can be applied to all types of Pyle-National headlight turbines.

Motor Bearing With Provision for Emergencies

A SLEEVE BEARING for motors, which is designed to meet emergency conditions, is being shown by the Howell Electric Motors Company, Howell, Mich. The bearing is made in two parts and consists practi-

cally of two bearings of a little more than half the usual length, placed side by side.

The inner half of the bearing is pressed tightly in the housing in the usual manner while the outer half is pushed into the housing with a light press fit. A set screw in each half keeps it from turning. If at any time the bearing should develop wear so that the motor rubs on the stator, or so that the motor does not function properly, the set screw in the outer half can be loosened and the outer half of the bearing turned through an angle of 180 deg., thus realigning the motor shaft. A screw driver is the only tool needed for this operation.

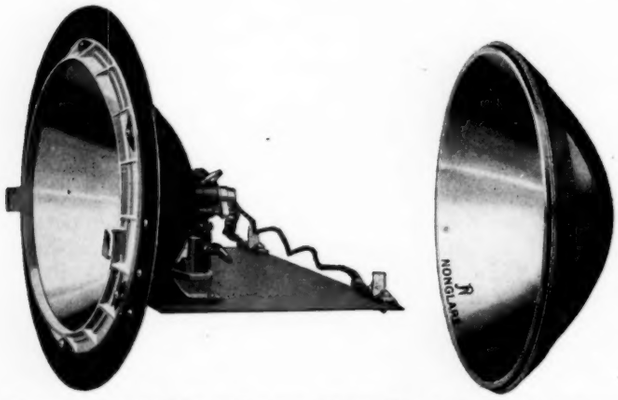
The particularly desirable feature of this type of bearing is that if the bearing should fail at a time when the motor is needed badly, only a few minutes are required to put the motor back in service and the service may be continued for a considerable time before a new bearing is required.

The bearing housing has an additional feature in the form of an oil well barrier so designated as to prevent oil being drawn into the motor by the ventilating air. This bearing is standard equipment with all sizes of the Howell Red Band motors.

Locomotive Lighting Equipment

SEVERAL NEWLY DEVELOPED lighting devices for use on locomotives are being exhibited by the Pyle-National Company, Chicago. These consist of a glass reflector mounting for locomotive headlights, a 14-inch glass reflector, a cast metal headlight case and a rear tender lamp. In addition to these, the company is also showing two new types of flood lighting units for general service.

The glass reflectors are made of a moulded heat-proof optical glass, may be either of clear glass or of a colored glass known as "Nonglare." They are fire polished on the inside and are annealed to toughen the glass, after which the back of the reflector is ground to a parabolic curvature. They are polished by a special process, and then chemically silvered. The silver is covered with an electrolytically deposited coating of metallic copper. For further protection, an additional backing is placed over the copper, which has acid, gas and weather resisting



Glass Reflector Mounting for Sheet Metal Headlight Cases and a 14-Inch Glass Reflector

qualities. It is claimed that the "Nonglare" reflector reduces the glare from the light without materially affecting the beam candle power. Either of the two reflectors can be furnished in 12 in. or 14 in. diameters with a focal length of 2¼ in.

The interior headlight reflector mounting has been designed for the purpose of applying glass reflectors to the sheet metal headlight cases made by the Pyle-National Company. The reflector is encased in a drawn steel protector shell and is held in place by an aluminum ring. The mounting is interchangeable with the 18 in. copper reflector.

The cast headlight cases are made either of cast iron, or of an aluminum alloy, and are provided with a 14 in. glass reflector, and a 250-watt, 32-volt lamp. A machine taper fit is provided between the door frame and the body of the case to make the unit smoke, dust and gas-proof. A goggle door lock of improved design locks the door when closed. A weather-protected, accessible junction is provided between the case and the locomotive conduit system. There is a pre-assembled, electrical distribution with the case, so designed that it is only necessary to connect the main leads with the distribution block to provide constant numeral light with full, dim and extinguished headlamp. The standard 14 in. cast iron case

Headlight with Cast Metal Case

is 16½ in. high, 14½ in. deep, 18 in. wide and weighs about 85 lb. The cast aluminum alloy case is of the same dimensions and weighs something less than 45 lb. The body of both cases is cast in one piece.

The rear tender lamp is cast of a non-corrosive metal, is tapped at the top for ¾ in. conduit and is provided with three supporting lugs. The front door, into which a standard 55-¾ in, white signal lens is secured, is hinged, leaving the interior of the lamp accessible for lamp renewals and wire connections. The door is fastened with a spring latch. A receptacle with grips is used, and the connections to the receptacles are made in such a manner as to leave them accessible for testing the lamp circuit. A plate glass covers an opening in the bottom of the case through which a beam of light is thrown downward and outward, lighting the coupler and step. The beam light through the lens is augmented by mirrors. The lamp is 7½ in. high, 8 in. wide and 5½ in. deep. It is claimed to be water-tight and constructed throughout to meet the most severe locomotive service.

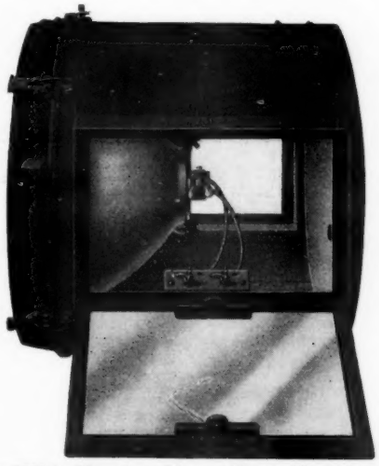
Simplex Reverse Gear

A NEW TYPE of locomotive reverse gear is being shown by J. M. Widgeon, Norfolk, Va. This is a combined power and hand operated mechanism whereby power may be used to effect reversal and hand operation may then be used independent of the power operation to obtain suitable and accurate adjustments. An air-operated cylinder controlled by a valve in the cab

serves to reverse the engine. Close adjustments are secured by a handwheel and screw. No air is used when the locomotive is running and the piston can not creep and affect the cut-off. Hand and power gears are entirely independent. The mechanism is simple and should be easily and cheaply maintained.

Locomotive Headlight

A LOCOMOTIVE HEADLIGHT HAS been developed by the Sunbeam Electric Manufacturing Co., Evans, Ind., which employs the principle used in the manufacture of automobile headlights of having the reflecting surface and front glass contained in a separate airtight unit or goggle. The airtight unit can be removed from the headlight case and is held in the case by heavy spring clamps; there are no hinges. The lamp is mounted in a universal focusing device which can be removed from the airtight unit without disturbing the position of the reflector or front glass. The manner in which the reflector and front glass are held in place is shown in the sectional view.



Headlight With Number Door Open Showing Focusing Device and Terminal Connections

In case it is necessary to renew the front glass, the four clamps holding the goggle are opened and the airtight unit removed. The unit is laid face downward on a bench, or on some part of the locomotive, and the spring clamps shown in the detailed section are snapped open. This is done by inserting a screw driver or similar tool behind the link which holds the spring. The spring and link form a toggle which swings entirely outside of the unit when it is loosened.

Rear View and Section of Air Tight Unit Showing Method of Holding Reflector

The reflector is made from heavy copper, spun to a parabolic curve and triple silver plated. It is 18 in. in diameter by 9 in. deep. The apex or filler ring which is removed with the focusing device and lamp is polished and has the same contour as the reflector, thus adding to the beam candle power of the headlight.

The case is made of 16-gage iron protected with baked automobile fender enamel. The weight of the headlight is 68 lb.

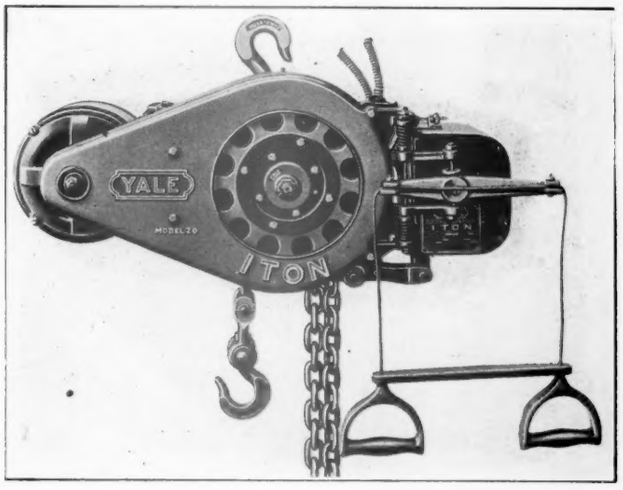
Industrial Truck and Chain Hoist

AN ELECTRIC CRANE model of industrial truck and a new and improved electric chain hoist are noticeable features of the exhibit of the Yale & Towne Manufacturing Company, Stamford, Conn.

A type of truck which is particularly well adapted for use in railroad shops and storehouses consists of a combination of an electric crane mounted on a Yale A-17 truck. It is intended for service where material is to be raised or lowered vertically and then transferred horizontally, the work being accomplished by a single mechanical and electrical unit.

This truck has two-wheel drive with two-wheel steer, and a turning radius of 7½ ft. at the center of the truck. It is particularly well adapted for inter-plant or yard service where heavy castings, structural shapes or bulky crated material must be handled safely and expeditiously.

The extreme flexibility of this mobile hoisting and conveying unit is unique. The crane mast is mounted on heavy-duty thrust ball-bearings, permitting the boom to be easily rotated through an arc of 180 deg. The operator has direct control of a two-speed hoisting mechanism, consisting of a motor direct-connected to a worm-and-gear and a grooved hoisting drum. A single electrically welded hoisting chain interlocks with a load sheave located on the end of the hoisting boom; a ratchet mechanism permits the operator to spot the hoisting hook in any desired position and to either raise or lower the load and the boom singly or simultaneously.



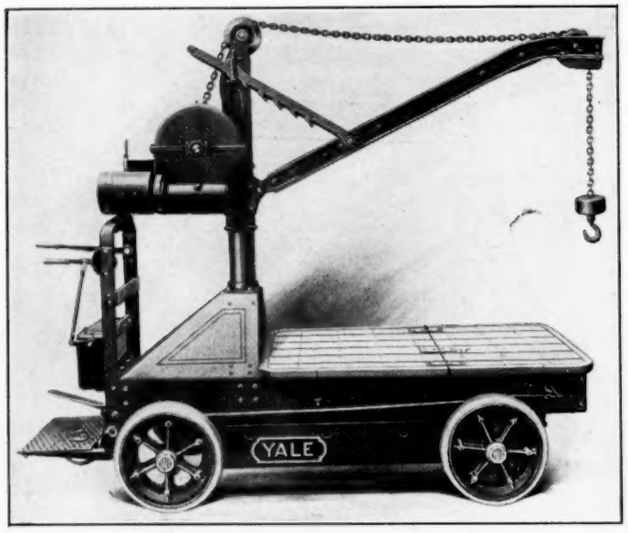
Model 20 Electric Chain Hoist With Double Handle Control

The boom consists of two 4-in. steel channels and has

an outreach of from 24 in. to 69½ in. from the center of the mast. The height with boom in lowered position is 91 in. The weight complete with batteries ranges from 3175 lb. to 3285 lb., dependent upon the type of battery used. The hoisting speed varies from 12 ft to 52 ft. per min., dependent upon the load. The capacity ranges from 1100 lb. at the maximum reach to 1900 lb. at 24 in.

The Yale Model 20 electric chain hoist is exhibited in two types—the ordinary method of control with two handles and a new method of remote control by means of push buttons. This model, made in units ranging from ¼ to 2 tons capacity, when used singly or in conjunction with hand cranes, occupies a position midway between the hand-block and the electric traveling crane. Wherever loads up to two tons must be lifted quickly, moved horizontally, and placed in position many times a day, as in serving automatic machines or furnaces, in loading cars, in storing material, the chain hoist meets every requirement. It is a quick-acting piece of apparatus that requires no particular skill to operate and uses a small quantity of power.

The roller ratchet mechanism is an important improvement. Where formerly the cast iron ratchet wheel and ratchet pawl have been used to prevent slippage of the load in hoisting, the Yale Model 20 embodies a distinctly different principle. A hardened steel ratchet wheel carries



A Crane Type Industrial Truck Is Exceedingly Useful in Railroad Shops and Storehouses

hardened steel rollers in a bath of oil within a closed compartment. All surfaces in contact are ground to an accurate finish so that frictional resistance is minimized during the lifting period.

The function of holding the load is accomplished by the advancement of the steel rollers along the evenly distributed inclined wedges of the ratchet wheel. Being applied gradually around the entire circumference of the wheel simultaneously, they effectively prevent any slippage of the load when the power is shut off.

Two asbestos friction discs, one on either side of the ratchet wheel, provide large surfaces for the dissipation of the heat developed in lowering the load.

The hoist is fitted with a drum brake positively operated by the controller handle. When the current is on, the brake arms are lifted clear of the drum, so that there is no dragging or friction during the hoisting operation. Immediately the current is shut off, the brake arms clamp tightly around the hoisting drum, producing a powerful, quick-action brake.

Under certain conditions it is necessary for the hoist operator to watch his load carefully and at times to use one hand in guiding the load during the hoisting and lowering operations. The push button control model has been developed to give the operator the greatest amount of freedom under these conditions. The push buttons are set in a block that is suspended from the hoist on a flexible cable. The block fits easily in the hand and the buttons can be operated by the thumb or one finger. The raising and lowering circuits are mechanically interlocked so that it is impossible to operate in both directions at the same time, even when both buttons are accidentally pushed in together.

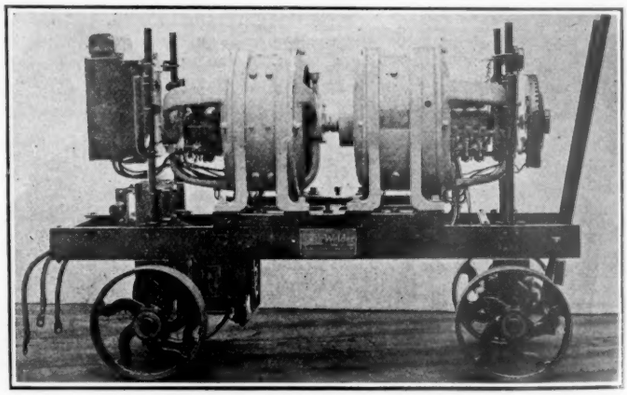
A solenoid brake is applied to the motor shaft and so arranged that the brake is immediately applied as soon as the circuit is opened either by removing the finger from the button, by the action of the limit switch, or by the loss of voltage from any cause.

On the push button model hoist the limit switch is arranged to open the circuit positively when the load reaches its maximum travel in either direction, so that the solenoid brake is immediately brought into play. When the limit switch functions, either for raising or lowering, the corresponding push button is thrown out of circuit so that it is not possible to operate the motor again until its direction of rotation has been reversed, thus relieving the limit switch.

A Large Capacity Welding Set

A PORTABLE WELDING outfit of increased capacity is being exhibited by the U. S. Light & Heat Corportion, Niagara Falls, N. Y. It consists of a motor-generator set and control apparatus mounted on a four-wheel hand truck.

The generator has a continuous capacity of 300 amperes, and for cutting and other work of an intermittent nature will develop 400 amperes. It is designed with



The 350-Ampere U. S. L. Welding Set

inherent regulation and has the same characteristics as the 200-ampere machine made by the same company. The generator is also furnished for belt or gas engine drive.

The set is supplied with either a direct or alternating current motor and weighs complete about 1,700 lb.